

**MEETING NOTICE AND AGENDA**  
**MANSFIELD INLAND WETLANDS AGENCY**  
**Monday, December 7, 2015 ■ 7:00 PM**

Audrey P. Beck Municipal Building ■ 4 South Eagleville Road ■ Council Chambers

- 1. Call to Order**
- 2. Roll Call**
- 3. Review of Minutes**
  - a. 11-2-15 – Meeting Minutes
  - b. 11-16-15 – Special Meeting Minutes
- 4. Communications**
  - a. Conservation Commission Minutes
  - b. Monthly Business Memorandum
- 5. Public Hearing**
  - a. **W1557 – C. L. Niarhakos, 101 East Road, 3 lot re- subdivision**  
Public Hearing Tabled. No presentation will be made. Applicant requested hearing be continued to 1/4/2016.
- 6. Old Business**
  - a. **W1557 – C. L. Niarhakos, 101 East Road, 3 lot re- subdivision**  
Item tabled- Public Hearing Continued
- 7. New Business**
  - a. **W1559 – Storrs Lodges, LLC, Application to Amend Inland Wetlands and Watercourses Map**
  - b. **W1560 – M. Slowik, 895 Mansfield City Road, Lot Split for Single Family Dwelling**
  - c. **J-5 Jurisdictional Ruling Dunham Pond Road**
- 8. Reports from Officers and Committees**
- 9. Other Communications and Bills**
  - a. CACIWC Information
    - Handout from Attorney Janet Brooks outlining the roles and responsibilities of Wetland Agency Members
    - Handout from Attorney Mark Branse *“WHAT’S SUBSTANTIAL EVIDENCE FOR INLAND WETLANDS & WATERCOURSE COMMISSIONS?”*
- 10. Adjournment**

**DRAFT MINUTES**

**MANSFIELD INLAND WETLANDS AGENCY**

Regular Meeting

Monday November 2, 2015

Council Chamber, Audrey P. Beck Municipal Building

Members present: B. Pociask, K. Rawn, R. Hall, G. Lewis, J. Goodwin, V. Ward, B. Chandy  
Members absent: B. Ryan  
Alternates present: S. Westa, K. Holt, P. Aho  
Staff present: Jennifer Kaufman, Inland Wetlands Agent

Chairman Goodwin called the meeting to order at 7:00 p.m. and appointed P. Aho and K. Holt to act.

**Proclamation in Honor of Peter G. Plante:**

Chairman Goodwin read a proclamation in honor of former member Peter G. Plante and presented to his wife, the framed proclamation and a donation to the Mansfield Lions Club.

**Approval of Minutes:**

10-05-15 – Regular Meeting Minutes: Chandy MOVED and Holt seconded to approve the 10-05-15 meeting minutes as presented. MOTION PASSED. Rawn noted for the record that he listened to the meeting recording. Hall, Pociask and Ward disqualified themselves.

10-14-15 – Field Trip Minutes: Tabled until next agenda.

**Communications:**

The Conservation Committee meeting minutes and Kaufman's monthly business memo were noted.

**Public Hearing:**

W1557 – Niarhakos, 101 East Road, 3 Lot re-subdivision: Public hearing opened at 7:06 p.m. Holt recused herself from consideration of this item. Alternates Aho and Westa were seated. Kaufman read the legal notice into the record and noted that the following communications had been received:

- 10/28/2015 Memo from J. Kaufman;
- 10/22/15 letter from Joseph Boucher of Towne Engineering;
- 10/16/2015 report from Chuck Eaton and Richard Canavan of CME;
- 9/30/15 letter from Chris Niarhakos;
- 9/16/15 memo from Jennifer Kaufman;
- 9/15/2015 letter from Caleb Hamel of Branse and Willis LLC including a Verified Notice of Intervention; and
- 9/4/2015 memo from Windham Water Works. No public comments were received.
- 9/2/2015 memo from Jennifer Kaufman.

No public comment was offered.

As per an earlier request of the applicant to continue the hearing to allow time to consider and respond to the Agency's expert report, Rawn MOVED and Ward seconded to continue the public hearing on the 3-lot subdivision application of Christopher and Lindsey Niarhakos (File W1557), 101 East Road, Williams

Heights subdivision to December 7, 2015. MOTION PASSED UNANIMOUSLY. The public hearing was closed at 7:10 p.m.

Holt was reseated and Westa was no longer seated.

**Old Business:**

W1556 – R. Manning, 37 Higgins Highway, Site Work: Chandy MOVED and Holt seconded to approve the following motion:

“to grant an Inland Wetlands License pursuant to the Wetlands and Watercourses Regulations of the Town of Mansfield to R. Manning (File #W1556) for site work on property owned by Doreen Palmer and located at 37 Higgins Highway as shown on plans dated 9/29/2015 and as described in application submissions.

This action is based on a finding of no anticipated significant impact on the wetlands, and is conditioned on the following provisions being met:

1. Appropriate erosion and sedimentation controls shall be in place prior to construction, maintained during construction and removed when disturbed areas are completely stabilized;
2. Silt Fence shall be installed at least 10 feet from the edge of wetlands and maintained until the area is stabilized; and
3. A storm water filtration device shall be installed at least 20 feet from the edge of wetlands in accordance with the 2002 CT Guidelines for Soil Erosion and Sediment Control.

This approval is valid for five years (until November 2, 2020) unless additional time is requested by the applicant and granted by the Inland Wetlands Agency and is contingent upon all other local, state and federal permit requirements being met. The applicant shall notify the Wetlands Agent before any work begins and all work shall be completed within one year. Any extension of the activity period shall come before this Agency for further review and comment.”

MOTION PASSED. Pociask disqualified himself.

W1558 – K. Mehrens, 214 Wormwood Hill Road, 12’x16’ Shed: Rawn MOVED and Holt seconded to approve the following motion:

“to grant an Inland Wetlands License pursuant to the Wetlands and Watercourses Regulations of the Town of Mansfield to K. Mehrens (File #W1558) for installation of a shed on property owned by the applicant and located at 214 Wormwood Hill Road as shown on plans dated 9/29/2015 and as described in application submissions.

This action is based on a finding of no anticipated significant impact on the wetlands, and is conditioned on the following provisions being met:

1. Appropriate erosion and sedimentation controls shall be in place prior to construction, maintained during construction and removed when disturbed areas are completely stabilized.

This approval is valid for five years (until November 2, 2020) unless additional time is requested by the applicant and granted by the Inland Wetlands Agency. The applicant shall notify the Wetlands Agent

before any work begins and all work shall be completed within one year. Any extension of the activity period shall come before this Agency for further review and comment.”

MOTION PASSED. Pociask disqualified himself.

W1557 – C. L. Niarhakos, 101 East Road, 3 lot re-subdivision: Item tabled pending 12/7/15 public hearing continuation.

**New Business:**

No new business.

**Reports from Officers and Committees:**

No reports were offered.

**Other Communications and Bills:**

Noted.

**Adjournment:**

Chairman Goodwin adjourned the meeting at 7:15 p.m.

Respectfully submitted,

Vera S. Ward, Secretary

**DRAFT Minutes**  
Mansfield Inland Wetlands Agency  
Special Meeting  
Monday, November 16, 2015  
Council Chambers, Audrey P. Beck Municipal Building

Members present: C. Ausburger, B. Chandy, J. Goodwin, R. Hall, G. Lewis, K. Rawn, B. Ryan, V. Ward, S. Westa

Members absent:

Alternates present: P. Aho, K. Holt

Staff present: L. Painter, Director of Planning and Development

Chairman Goodwin called the special meeting to order at 8:21 p.m.

**Roll Call:**

All present.

**Organizational Meeting:**

- A. Introduction of New Member: Charles Ausburger was introduced.
  
- B. Election of Officers:
  - Chairman: Ward MOVED, Chandy seconded to elect Goodwin as Chairman. The motion passed unanimously.
  - Vice Chairman: Rawn MOVED, Ward seconded to elect Ryan as Vice Chairman. The motion passed unanimously.
  - Secretary: Ryan MOVED and Chandy seconded to elect Ward as Secretary. The motion passed unanimously.
  
- C. Review of By-Laws: Westa MOVED, Hall seconded to amend Articles VI, VIII, XII, and XV of the By-Laws of the Mansfield Inland Wetlands Agency as recommended by the Director of Planning and Development in her November 12, 2015 memo.

In addition to the specific changes recommended by the Director, the Agency also adopts the following amendments:

- Amend Article VII, Section 1 to read as follows:  
Regular meetings will be held on the first Monday of each month at 6:30 p.m. at an appropriate place designated by the Agency. In the event of conflict with holidays or other events, a majority at any meeting may change the date or time of said meeting. The Secretary shall notify the membership of special meetings not less than 24 hours in advance of such meeting. In accordance with the

requirements of the Freedom of Information Act, a schedule of regular meetings for the calendar year shall be adopted by the Commission and filed with the Town Clerk prior to January 31.

The motion passed unanimously.

**2016 Meeting Schedule:**

Ausburger MOVED and Hall seconded to approve the 2016 meeting schedule for the Inland Wetlands Agency with the start time changed to 6:30 p.m. The motion passed unanimously.

**Adjournment:**

Chairman Goodwin adjourned the meeting at 8:25 p.m.

Respectfully Submitted,

Vera S. Ward  
Secretary

Town of Mansfield  
**CONSERVATION COMMISSION**  
Meeting of 18 November 2015  
Conference B, Audrey P. Beck Building  
**(draft) MINUTES**

*Members present:* Aline Booth (Alt.), Quentin Kessel, Scott Lehmann, Grant Meitzler, John Silander, Michael Soares. *Members absent:* Joan Buck (Alt.), Robert Dahn, Neil Facchinetti.

**1.** The meeting was **called to order** at 7:31p by Chair Quentin Kessel. In the absence of Dahn & Facchinetti, Booth was appointed a voting member for this meeting.

**2.** The **draft minutes** of the 21 October 2015 meeting were approved as written.

**3. IWA referrals.** Consideration of W1557 (Niarhakos, 101 East Rd) was deferred to the December meeting, at the request of the applicant.

**4. 2016 Meeting Schedule.** The Commission ratified the proposed 2016 regular monthly meeting schedule after verifying that all the dates are indeed third Wednesdays and accepting on faith Jennifer Kaufman's assurance that none conflict with significant religious holidays.

**5.** According to Booth, **Joan Buck** is doing well but is not yet able to drive; she appreciates being given more time to consider whether to continue as an alternate Commission member.

**6. UConn Hazardous Waste Transfer Facility.** Kessel reported that construction of a new facility to receive hazardous waste generated at UConn and hold it for transfer to somebody else's backyard is being put off until next year; it was to have been completed in January 2016.

**7. Storrs Center update.** Kessel noted that the Town will acquire 23 acres of open space in the Storrs Center development, though he recalled hearing in a presentation to the Commission some years ago that it was to be 30 acres. The promised underground storm-water retention and infiltration system to recharge groundwater is now under construction.

**8. Monitoring Town-held Conservation Easements.** The Commission has been charged with monitoring Town-owned conservation easements, which now number about fifty. It will aim to monitor ten easements per year. To begin this process, Kaufman has provided maps and other material on three easements, asking the Commission to let her know at least a week in advance when monitoring will occur so that she can notify landowners by letter. Kessel, Soares, and Silander (resp.) agreed to organize monitoring of these easements: Glen Terrace (Elise Rd), Rudi Favretti (Middle Tpk), and Silver Falls Development (Birch & Hunting Lodge Rds) (resp.). It was suggested that:

- At least two Commission members participate in any monitoring visit. (Kessel)
- Commission members be notified of such visits in advance by e-mail and invited to participate. (Lehmann)
- Photographs be taken of evidence of any violation of the easements – constructing outbuildings, storing dead cars, dumping refuse, cutting trees, etc. (Meitzler)

**9. Adjourned** at 8:40p. Next meeting: 7:30p, Wednesday, 16 December 2015.

Scott Lehmann, Secretary, 19 November 2015.



# Town of Mansfield

## Inland Wetlands Agency

**Date:** December 2, 2015  
**To:** Mansfield Inland Wetlands Agency  
**From:** Jennifer Kaufman, Inland Wetlands Agent  
**Subject:** Monthly Business Report

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### **Mansfield Auto Parts - Route 32**

On December 2, 2015, I monitored the site and there were no cars or automobile parts that may contain oil or other fluids located within 25 feet of the wetlands.

### **Agent Approvals**

None



# Town of Mansfield

## Department of Planning and Development

**Date:** December 2, 2015  
**To:** Mansfield Inland Wetlands Agency  
**From:** Jennifer Kaufman, Inland Wetlands Agent  
**Subject:** 101 East Road (File #W1557)  
Christopher and Lindsey Niarhakos  
Description of work: 3 Lot Subdivision

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In October, the applicants requested that the public hearing be continued to December 7, 2015. Section 11.2 of the regulations states that a public hearing be completed within thirty-five (35) days of its commencement. However, if additional time to consider the application is necessary, the applicant may consent to one or more extensions, provided the total extension for all periods shall not be longer than sixty-five (65) days.

In a November 19, 2015 email, the applicants requested that the public hearing be extended until January 4, 2016 so that they may adequately respond to the comments submitted by the Agency's independent consultant, CME Associates. Staff recommends that the Agency grant the applicant's request.

If the IWA agrees with staff recommendations to grant the applicant's extension, the following motion would be in order:

\_\_\_\_\_ MOVES, \_\_\_\_\_ seconds to extend the public hearing on the 3-lot subdivision application of Christopher and Lindsey Niarhakos (File W1557), 101 East Road, Williams Heights subdivision until January 4, 2016.



# Town of Mansfield

## Department of Planning and Development

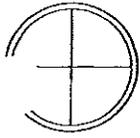
**Date:** October 28, 2015  
**To:** Mansfield Inland Wetlands Agency  
**From:** Jennifer Kaufman, Inland Wetlands Agent  
**Subject:** 101 East Road (File #W1557)  
Christopher and Lindsey Niarhakos  
Description of work: 3 Lot Subdivision

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In an October 21, 2015 email, the applicants requested that the public hearing scheduled for November 2, 2015 be continued to the December 7, 2015 meeting. This will allow the applicant time to respond to comments received from the independent consultant CME prior to making a full presentation of their application to the Agency.

If the IWA agrees with staff recommendations, after the public hearing is opened, the following motion would be in order:

\_\_\_\_\_ MOVES, \_\_\_\_\_ seconds to continue the public hearing on the 3-lot subdivision application of Christopher and Lindsey Niarhakos (File W1557), 101 East Road, Williams Heights subdivision to December 7, 2015.



# TOWNE ENGINEERING, INC.

PROFESSIONAL ENGINEERS • LAND SURVEYORS • EXPERT WITNESS

MAIL: P.O. BOX 162 SOUTH WINDHAM, CT 06266

OFFICE: 1 RICHMOND LANE, WILLIMANTIC, CT 06226

860-423-6371 • 860-889-2100 • Fax 860-423-5470

DONALD R. AUBREY, P.E., L.S.

JOSEPH H. BOUCHER, M.S., L.S.

MATTHEW D. MAYNARD, P.E.

October 22, 2015

Jo Ann Goodwin, Chairman  
Mansfield Inlands Wetlands Agency  
Mansfield Planning and Zoning Commission  
4 South Eagleville Road  
Mansfield, CT 06268

Re: Niarhakos - Current Inland Wetlands Application  
101 East Road, Mansfield, Connecticut  
Proposed 3 Lot Resubdivision Application  
TEI Job #14-019

Dear Chairman Goodwin,

During the course of our various reviews of the Niarhakos Resubdivision applications we have remained concerned that the location of the footing drain outlet for the existing home at 101 East Road has not been located or shown on the plans that we have reviewed to date.

During the recent October 5<sup>th</sup> site walk my supervisor, Donald R. Aubrey, P.E., L.S. who was unable to attend in person asked me to look for the footing drain outlet for the 101 East Road home so that he would be able to comment on the impact of that water discharge.

We were able to locate two footing drain outlets during the site walk, which are located approximately 42 feet (by pacing) northeasterly of the northeasterly corner of the 101 East Road home. These apparent footing pipe discharges are protected with a small stone headwall which by scale seems to be located at or just over the Lot #1/Lot #2 lot line.

For everyone's benefit, we would suggest that these footing drains be survey located and elevated by the Applicant's Land Surveyor with those details added to the plans submitted for further review so that a complete site plan review by all interested parties can be conducted fairly within the current application's remaining time constraints.

Based on advice of our Client's Legal Counsel, I am bringing this to your attention rather than contacting any of the Applicant's representatives directly and ask that you or your Staff pass on this suggestion to the Applicant.

October 22, 2015  
Joann Goodwin, Chairman  
Mansfield Inlands Wetlands Agency  
Mansfield Planning and Zoning Commission  
Niarhakos - Current Inland Wetlands Application  
101 East Road, Mansfield, Connecticut  
Proposed 3 Lot Resubdivision Application  
TEI Job #14-019  
Page 2 of 2

Thank you for your consideration of this matter.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'J. Boucher', written over a horizontal line.

Joseph H. Boucher, M.S., L.S.  
For: Towne Engineering, Inc.

Cc: Jennifer Kaufman, Wetlands Agent  
Mary & Ross Harper  
Attorney Caleb Hamel

## Inland Wetland Agency Site Plan Review



Architecture  
Engineering  
Planning  
Land Surveying  
Environmental  
Services

October 16, 2015

Town of Mansfield Inland Wetland Agency  
4 South Eagleville Road  
Storrs-Mansfield, CT 06268  
*sent via e-mail*

RE: 101 East Road, 3-Lot Subdivision, Mansfield, CT  
Inland Wetland Agency Site Plan Review

Dear Agency Members,

As requested, CME Associates, Inc. (CME) reviewed the following materials submitted to the Town by the Applicant:

- Item 1. Set of four (4) drawings entitled "Boundary Plan for Resubdivision entitled William Heights Parcel "A", East Road, Storrs, Connecticut, Owner and Subdivider, Christopher W. & Lindsey L. Niarhakos, 68 Brookside Lane, Mansfield Center, Connecticut 06250", dated March 30, 2015, revised June 21, 2015, prepared by Datum Engineering & Surveying, LLC.
- Item 2. Hydrology and Drainage Report entitled "Resubdivision, William Heights Parcel "A", East Road, Storrs, Connecticut", revised August 28, 2015, prepared by Civil Engineering Services, LLC.

CME also received materials submitted to the Town by the Intervener in a letter to the Agency from Mary Harper, dated July 4, 2015.

The following review comments based upon the following references and regulations as well as a site walk performed on October 5, 2015:

- Town of Mansfield Department of Public Works Engineering Standards and Specifications, revised through December 2005
- Mansfield Inland Wetlands & Watercourses Regulations, revised through February 15, 2012
- Connecticut Department of Transportation Drainage Manual, December 2000, as amended
- 2002 Connecticut Guidelines for Soil Erosion and Sediment Control

☎ 860.928.7848  
🌐 [www.cmeengineering.com](http://www.cmeengineering.com)  
🏠 32 Crabtree Lane, PO Box 849, Woodstock, CT 06281

- 2004 Connecticut Stormwater Quality Manual

The State manuals referenced above are used state-wide as the typical standards for the design of stormwater drainage facilities that manage groundwater recharge, stormwater quantity, and stormwater quality as well as soil erosion and sediment controls. The Mansfield Department of Public Works Engineering Standards and Specifications references the Connecticut Department of Transportation Drainage Manual, which references both the Connecticut Guidelines for Soil Erosion and Sediment Control and the Connecticut Stormwater Quality Manual. Also, the Connecticut General Permit for Stormwater and Dewatering Wastewaters from Construction Activities, Section 3(d) *Small Construction*, requires that projects follow the State Erosion Control Guidelines and Stormwater Quality Manual. Therefore, these manuals are used as reference material for this review. Other manuals and standards may be available as design guidance for the Design Engineer. The Design Engineer should provide reference to and justification for using different design methods outside of these references.

The design plans and calculations submitted by the Applicant appear to be preliminary and state that individual site plans shall be prepared that will indicate the appropriate size and shape of the proposed detention/recharge basins. Due to the preliminary nature of this material and the subsequent need for additional information based on this review, these comments should be considered preliminary and additional comments should be expected as new material is submitted.

In general, these comments pertain to design issues that relate to potential impacts to wetlands and the northeast abutting property. Some comments may not directly impact wetlands, but are issues that should be addressed to ensure both public safety and that the construction of the site will comply with the proposed plans.

1. The wetland delineation shown on the plans appears accurate based on the observations made on the October 5, 2015 site walk. A detailed analysis of the delineation was beyond the scope of this review; however, based on the site walk no wetland areas were observed at the project site beyond what is depicted as wetlands on the project plans.
2. Section 7.4 F.(2) of the Mansfield Inland Wetlands and Watercourses Regulations requires a description of how the project maintains or enhances the existing environmental quality. The application materials lack a description of wetlands functions and values and how they are maintained by the proposed project.
3. Section 7.4 G. of the Mansfield Inland Wetlands and Watercourses Regulations requires that alternatives which would cause less or no environmental impact be drawn on site plans. The application material from John Alexopoulos references an open space subdivision alternative without defining which alternative is less impacting. No layout plan of any project alternatives are provided.
4. The application proposes a new inlet structure to an existing municipal cross culvert under East Road near the proposed driveway entrance to Lot #3. This includes work in an intermittent watercourse as identified by Martin Brogie and presented on the project plans. Additional information is required to quantify impacts to this resource area. Based on the project plans and narrative it is not clear whether all drainage to the existing cross culvert will be directed to the new catch basin inlet. The existing culvert inlet is in an excavated channel and it is not clear if the new depression will have enough storage to

- avoid overtopping the proposed driveway. The proposed foundation drain at lot #3 discharges near or at the drainage structure but it is not clear if it is a direct connection or requires a stabilized open channel. The foundation drain and the long run of the pipe below grade, which may act as a curtain drain, have the opportunity to redirect shallow groundwater to this Town drainage structure and discharge on the adjacent parcel.
5. There are several constructed swales present on and adjacent to the subject parcel which have been constructed to manage runoff and shallow groundwater breakout. The excavated swales display a range of scour and sediment deposition. The project proposes point discharges to existing slopes from two stormwater basins and the curtain drain/foundation drain at lot #2. The discharge of water in a point discharge on the slopes at the site creates the opportunity for the development of eroded channels downstream of these discharge locations (see also comment #14).
  6. The surface of the wetland between proposed lots 2 and 3 includes microtopographic features and meandering flow paths for surface water runoff. The creation of a point discharge upgradient of this wetland creates the opportunity for a channel to cut into the soil surface. In addition to possible erosion impacts, the creation of a channel within the wetland could reduce water storage and residence time within the wetland and adjacent low areas that would drain to the channel. The plan set and the drainage calculations provided to CME by the Town of Mansfield were not certified. The Agency should ensure that appropriately certified materials are submitted by the Applicant.
  7. The Design Engineer provided calculations to address the "potential for loss of water storage on the parcel which could affect the movement of groundwater and/or the volume of water moving off site." Based on the Connecticut Stormwater Quality Manual these calculations do not appear to follow convention for determining groundwater recharge required by a development. CME suggests the Design Engineer follow the groundwater recharge methodology found in the Connecticut Stormwater Quality Manual. This calculation method and the associated practices to recharge groundwater is the current standard for Connecticut. Soil testing in the location of the stormwater basins is required to ensure that recharge would occur. The Design Engineer should follow the Connecticut Stormwater Quality Manual methodology to design and locate a stormwater recharge system. The amount of recharge required and provided for this development cannot be determined based on the submitted calculations and lack of soil testing provided. It would appear based on septic system test pit data that the stormwater/detention basin bottoms as proposed would be at the elevation of the existing groundwater and minimal groundwater recharge would be provided.
  8. Note 17 on Sheet 2 indicates that the stormwater recharge areas are conceptual and assume that the building roof leaders will be directed to the recharge areas. Roof leaders must be designed and shown on the plan set to ensure they will function properly. If the roof leaders do not function properly, rooftop runoff will enter drainage area RA 4 and may cause an increase in runoff to the downgradient property. Stormwater practices presented on the plan must be fully designed to evaluate their effectiveness and constructability.
  9. The Design Engineer must provide the TR-55 time of concentration calculations to allow for a complete review of the drainage calculations.
  10. The rainfall intensity does not appear to consistently match the CTDOT rainfall intensity tables. Specifically, the rainfall intensity for drainage area RA3 in a 10-year storm event is

listed as 2.87 in/hr and the CTDOT table indicates an intensity of 3.5 in/hr. The Design Engineer must review the rainfall intensities used within the drainage calculations. Inconsistent rainfall values will not allow for a proper comparison of stormwater runoff between pre and post development and will not yield accurate runoff volumes for stormwater basin design.

11. The drainage report is missing Page 6 for the proposed drainage calculations of drainage area RA 6 in a 2-year storm event.
12. The Design Engineer should review the area of impervious surface cover (driveway and roof) used to calculate the runoff coefficient for proposed drainage area RA 7. The impervious area value appears to be low. Changes in runoff coefficient will directly affect the stormwater runoff calculations.
13. The Design Engineer must provide a design and associated detail of the proposed stormwater basin outfalls. The outfall must be properly sized to prevent downstream erosion and channelization.
14. Pursuant to Section 5-10 Energy Dissipaters of the Connecticut Soil Erosion and Sediment Control Guidelines the outlet protection for piped discharges shall not discharge to slopes greater than 5%. The proposed stormwater basin outlets discharge to slopes of 10% and risk rechannelization and erosion downgradient of the outlet. The Design Engineer must review these outlet locations to ensure downgradient areas will remain stable.
15. The Design Engineer must review the grading and drainage calculations for stormwater basin 2 on Lot 3. The proposed elevations of the emergency overflow must match the elevation used in the drainage calculations.
16. The detail of the stormwater basin outlet structure is unclear. The Design Engineer must provide the following information to ensure it will function properly and be built according to the proposed plans and drainage calculations:
  - a. Dimension and clearly show the weir and top opening. These dimensions must match the dimensions used in the drainage calculations.
  - b. The outlet pipe size must be provided and considered in the drainage calculations.
  - c. Clarify proposed orifice diameters on the outlet detail. The detail currently indicates 2", 3" and 4" diameter orifices. The drainage calculations use 3" and 4" diameter orifices in the outlets.
  - d. Overall design and proposed material makeup of the outlet structures to ensure it will be structurally sound, water tight, and will not float when the basin is full of stormwater.

The outlet structures must be constructed in the same configuration as modeled in the drainage calculations. A different configuration may result in failure of the basin or different stormwater runoff values.

17. The Design Engineer must detail and dimension the proposed stormwater basin riprap overflow to ensure it will be constructed properly and will allow the stormwater basin to function properly.
18. The 1-inch mesh screen trash rack for the stormwater basin outlets must be detailed. The screen must be structurally designed to withstand damage from debris buildup. Failure of the screen will allow clogging of the outlets and may cause different stormwater runoff values from the basin.

19. Pursuant to the Connecticut Soil Erosion and Sediment Control Guidelines, Section 9-1, detention basins are required to have a minimum freeboard of 1-foot between the routed water surface and the top of the embankment for a 100-year storm event. The 100-year water surface elevation of the proposed detention basin 2 on Lot 3 does not appear to allow the required freeboard. The Design Engineer must review the design to ensure a 1-foot freeboard during a 100-year storm event.
20. Pursuant to the Connecticut Soil Erosion and Sediment Control Guidelines, Section 9-1, detention basin embankments must be a minimum of 8-feet wide at the top. The Design engineer must revise the grading as required to meet this requirement.
21. A detail indicating construction materials and their method of placement for the embankments of the stormwater basins must be provided to ensure they meet the requirements of the Connecticut Erosion and Sedimentation Control Guidelines. Failure to properly design and construct these embankments may result in failure of this stormwater management practice and the release of impounded stormwater.
22. Design for sediment control within the proposed swales to the stormwater basins must be revised pursuant to the Connecticut Soil Erosion and Sediment Control Guidelines. These Guidelines should be followed to provide proper practices and their associated maintenance during construction. A single check dam within the 500-foot swale will not reduce velocities within the swale or effectively prevent sediment from entering the stormwater basin.
23. The Design Engineer must revise the drainage routing calculations for Pond 2 on Lot 3 to set the starting water surface to 519.50, the elevation of lowest orifice outlet. Volume below this elevation may not be available if the basin does not drain between storm events. Accounting for the volume below the lowest orifice outlet may calculate a greater reduction in post development storm flow. Similarly, the Design Engineer must revise the drainage routing calculations Pond 1 on Lot 2 to set the starting water surface to 561.25.
24. The Design Engineer must review and revise the drainage calculation routing. It appears that the main design point of the drainage calculations is the property line of the downgradient northeast neighbor. This assumption appears sound as it would allow a comparison of pre and post stormwater discharge to the adjacent property. Several drainage areas are delineated to allow this comparison. However, the flow from multiple drainage areas that flow to the property line must be combined to determine the total peak discharge at this location. Several errors appear to occur during the routing of these drainage areas:
  - a. Under pre conditions, the discharge from drainage area DA 5 is not combined with DA 6 to calculate the total flow to the neighboring property from DA 6.
  - b. Under post conditions, the discharge from stormwater basin 2 is not combined with the runoff from RA 6 to provide a total flow at the property line.
  - c. Under post conditions, when runoff is routed through stormwater basin 2 from drainage areas RA 5 and RA 7, runoff from drainage area RA 8 is not included in the calculation.
25. The drainage basins delineated along the northeast property line assume that stormwater runoff will sheet flow onto the downgradient adjacent property. This assumption holds as long as sheet flow occurs under both pre and post development conditions. The proposed stormwater basin on Lot 3 includes a piped discharge 30-feet upgradient from the northeast property line. The grade on the lot and the adjacent

property in this area is approximately 10%. Pursuant to the Connecticut Soil Erosion and Sediment Control Guidelines, discharge onto slopes greater than 5% will rechannelize. This discharge is considered a point discharge and would concentrate stormwater runoff on the adjacent property and the sheet flow assumption at the property line is no longer valid. The Design Engineer must revise the drainage calculations to determine that post development runoff is not increased from pre development at the point on the property line where the proposed stormwater basin discharges and demonstrate that concentrated flows to the adjacent property will not cause any downgradient detrimental effects.

26. The Design Engineer used the Rational Method to determine the runoff to route through the proposed stormwater basins. The Rational Method cannot be used for final design of a stormwater or detention basin as it does not account for the entire volume of runoff produced by a storm event. This can allow for a high degree of error and should only be used for preliminary estimates. Discharges calculated with this method should not be used as a final determination that post development flows are less than or equal to pre development flows.
27. The Connecticut Stormwater Quality Manual recommends stormwater basin side slopes no steeper than 3:1 with a preferred 4:1 grade if they are to be mowed. The proposed basins have slopes graded at 2:1. The Design Engineer must revise the basin grading if the basins are to be mowed as recommended by the Manual.
28. CME recommends the Design Engineer prepare a stormwater management plan pursuant to the Connecticut Stormwater Quality Manual to ensure that the property owners understand and know how to clean and maintain the stormwater practices located on their property. Stormwater management practices, such as stormwater or detention basins, may not function properly if they are not cleaned and maintained. Failure may cause increased stormwater flows, erosion and sedimentation to downgradient properties. The operation and maintenance plan provided on the plan provides little information and should be expanded to include recommendations and requirements of the Connecticut Stormwater Quality Manual and the Connecticut Soil Erosion and Sediment Control Guidelines, such as mowing the stormwater basin berms and removing accumulated sediment and debris from the stormwater basins. The Agency should discuss having the Applicant record on a land deed that the property owner is responsible for inspecting and maintaining the practices so that future property owners are made aware of their responsibility.
29. Pursuant to the Connecticut Soil Erosion and Sediment Control Guidelines, the Design Engineer must consider long term maintenance access to the proposed detention basins and provide any required details on the plan set.
30. The Design Engineer must provide specific inspection and maintenance requirements for the erosion and sediment control plan pursuant to the Connecticut Soil Erosion and Sediment Control Guidelines.
31. A General Note on Sheet 4 indicates that excavations shall be discharged to a sediment basin separate from the stormwater basins. The sediment basin(s) must be sized pursuant to the Connecticut Soil Erosion and Sediment Control Guidelines. The basin should be preliminarily sized and located on the plan to ensure it will function with the slopes and grade of the properties.

32. The last paragraph of the Drainage Report indicates that the site plans to be submitted for the subdivision application may not be identical to the site plans submitted to the Inland Wetlands Agency, as the Inland Wetland plans are submitted to indicate "that the proposed subdivision can be developed without any increase in peak rate of discharge of stormwater from the site, and in accordance with all applicable Town of Mansfield regulations." The drainage calculations for this project are based on specific site plans with specific drainage areas as submitted to the Inland Wetlands Agency. If changes are made to the site plans, such as building or swale locations, the drainage areas and associated drainage calculations must be revised accordingly. These changes may result in an increase in stormwater runoff to downgradient wetlands or properties. This change in runoff may impact downgradient wetlands or properties and the Agency may wish to consider reviewing these changes to determine the significance of the impact.
33. The Design Engineer should specify specific seed for the stormwater basins. Based on test pit data, they may remain wet for a good portion of the year.
34. The proposed Lot 3 development plan includes the construction of a swale and stormwater basin within the proposed conservation easement and beyond the mapped Development Area Envelope. The construction of the basin will require clearing, grubbing and grading for the installation of the drainage infrastructure. The basin will require long-term vegetation management and periodic maintenance of the basin and outlet structure. The Agency should discuss whether the construction and maintenance required in this area is consistent with the requirements of a Conservation Easement area.
35. The proposed anti-tracking pads must be sized pursuant to the Connecticut Soil Erosion and Sediment Control Guidelines. If the Design Engineer cannot fit the required length of pad on the site, requirements for sweeping and/or methods for properly capturing sediment tracked off the site must be provided.
36. The Design Engineer should indicate on the plan the proposed limits of clearing and land disturbance. This will determine clearing within the regulated area and will allow a complete evaluation of soil erosion and sediment controls that may be required.

Please contact me if you have questions or concerns regarding the above comments.

Sincerely,



Chuck Eaton, P.E., LEED-AP  
Director of Municipal Services



Richard Canavan, Ph.D., PWS  
Sr. Environmental Scientist  
Registered Soil Scientist

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Christopher Niarhakos  
Lindsey Niarhakos  
68 Brookside Lane  
Mansfield Center, CT 06250

September 30, 2015

Inland Wetland Agency  
Audrey Beck Municipal Building  
4 South Eagleville Road  
Storrs, CT 06268

Attn: Ms. Jo Ann Goodwin, Chairman

**Re: 3 Lot Re-subdivision  
101 East Road Storrs, CT**

Dear Commissioners,

The purpose of this letter is to clarify some of the concerns listed in a letter submitted to the commission by Mary Harper on September 21, 2015.

I am the owner and applicant of the proposed re-subdivision at 101 East Rd. My last application was denied for inconclusive information regarding the Uconn property watershed. The denial letter stated, "Specifically, the applicant needs to verify the extent of the upgradient, northerly watershed to demonstrate that the storm water management basins and swales on the revised plan dated 6/21/2015 are adequately sized to manage the runoff so as not to adversely impact wetlands." Gerry Hardisty from CES has submitted a report with calculations including this water run-off in the design of the recharge ponds in our plans. The plans have not changed because the recharge ponds were originally drastically oversized.

There was also some confusion over the soil type designation that was used in Mr. Hardisty's calculations. Mr. Hardisty can explain this issue at the public hearing. The engineering calculations for drainage used common engineering practices. The point is that the difference in the soil classification has no impact on the drainage calculations.

We submitted the original wetlands application along with a subdivision application which requires an approval from the health department. We reached the final stages of the review process with EHHD which included revisions to our plans. During the second application process we submitted only a wetlands application which does not require a health department approval. We will pursue final EHHD approval with the submission of our subdivision application.

Prior to my purchase of the property at 101 East Rd. Don Aubrey prepared a report for the Harpers dated 4/25/2014. In this report Don states that "Clearly the adjoining site is developable in various areas based on the soil testing results we have reviewed..."

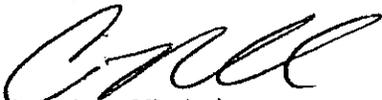
Mary Harper stated in a letter she submitted to the town that the water problems on her property started after my property was logged in 1998. Before 1998 she didn't experience any problems. This shows that the issue isn't the volume of water flowing through my property but how the water is controlled. Our plans propose a very conservative and effective design that will drastically improve the situation on the Harper's property.

Mary Harper has described in letters to the town that the site improvements she has had performed were due to water run-off. The facts are that the Harpers house was initially dug too deep. There has been poor workmanship used in the site "improvements" performed and work done without proper approval. The bank in the back of the house has been cut exposing the water table and causing a bleed out. The original septic system was repaired without a health department permit being issued. I think it would be valuable to review her site and the site work performed to determine if it was done correctly or if in fact she has exacerbated her own problems.

Before we drew the plans for the first application Ed Pelletier tried to have a conversation with Towne Engineering about the Harpers concerns. Ed was told that the Harpers instructed Towne not to discuss the issue with us. I have tried to contact the Harpers myself to do the same and have had no response. It is clear to me that the Harpers are against any development of my property regardless of what is in the design. The design in our application does not have any significant impact on wetlands. I plan to pursue this application for as long as it takes to get an approval.

I expect that the agency will approve our application based on our clarifications of the issues raised during the previous application process. I look forward to our site walk and our public hearing scheduled for November 2, 2015.

Sincerely,



Christopher Niarhakos



Lindsey Niarhakos



# Town of Mansfield

## Department of Planning and Development

Date: September 16, 2015  
To: Mansfield Inland Wetlands Agency  
From: Jennifer Kaufman, Inland Wetlands Agent  
Subject: 101 East Road (File #W1557)  
C. and L. Niarhakos.  
Description of work: 3 Lot Subdivision  
Map Date: March 30, 2015, revised through June 21, 2015

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Section 8.6 of Mansfield's Inland Wetlands and Watercourses Regulations and the Fee Schedule established in Article V, Chapter 122, Section 122-12 of the Mansfield Code of Ordinances, authorizes the Agency to hire independent consultants at the expense of an applicant when the Agency deems it necessary to do so. At your meeting of September 2, 2015, the Agency authorized staff to solicit proposals from independent consultants so that the Agency may retain an independent review of the above referenced application. Staff received proposals from 2 qualified firms. Two other firms were requested to submit proposals but had a conflict of interest.

Attached to this memo are proposals from two consultants, Milone and MacBroom, Inc. and CME, Inc. Both firms are on the state's approved list of contractors. In my opinion, both firms are qualified to perform the review. However, the proposal from CME is approximately half the cost of that of Milone and MacBroom. Therefore, I recommend that the Agency engage the services of CME Associates to analyze the information presented as part of the public hearing process and assist the Agency in determining whether the proposed activities as presented will have an adverse impact on the wetlands.

If the Agency agrees with this recommendation, the following motion is in order:

### Recommendation/Suggested Motion

\_\_\_\_\_ MOVES, \_\_\_\_\_ seconds to authorize staff to engage the services of CME, Inc. to review and analyze the information presented as part of the application for an Inland Wetland License submitted by C. and L. Niarhakos. (File #W1557) for 3 Lot Subdivision on property owned by the applicants and located at 101 East Road as shown on plans dated 3/30/2015 and revised through June 21, 2015, and as described in application submissions. Pursuant to Section 8.6 of Mansfield's Inland Wetlands and Watercourses Regulations, fees incurred for this review will be the responsibility of the applicants. A deposit in the amount of the estimated cost shall be provided prior to issuance of a notice to proceed.

## BRANSE & WILLIS, LLC

148 EASTERN BOULEVARD SUITE 301  
GLASTONBURY, CONNECTICUT 06033  
TELEPHONE: (860) 659-3735  
FAX: (860) 659-9368

MARK K. BRANSE  
MATTHEW J. WILLIS\*  
CALEB F. HAMEL  
ELIZABETH L. HEINS\*\*  
\*ADMITTED IN MASSACHUSETTS  
\*\*ADMITTED IN NEW YORK

E-Mails:  
mbranse@bransewillis.com  
mwillis@bransewillis.com  
chamel@bransewillis.com  
eheins@bransewillis.com

OF COUNSEL:  
RONALD F. OCHSNER

roschner@bransewillis.com

By email to KaufmanJS@mansfieldct.org

September 15, 2015

JoAnn Goodwin, Chair, and Members  
Mansfield Inland Wetlands Agency  
c/o Jennifer Kaufman, Inland Wetlands Agent  
Audrey P. Beck Municipal Building  
4 South Eagleville Road  
Mansfield, CT 06268

RE: IWA File #1557

Dear Madam Chair;

As you know, I represent Ross and Mary Harper in their review of the subdivision applications submitted by their neighbors, Mr. and Mrs. Niarhakos, for wetlands approval. I appreciate that the Agency decided to hold a public hearing on this latest application, and is apparently seeking a review of the application materials by an independent consultant. With this letter, I am submitting on behalf of my clients an updated **intervention under C.G.S. § 22a-19**. We filed a similar intervention in the previous application process, and are filing this to ensure that we continue to be part of the process going forward. I am also attaching a copy of the **reports submitted by Mr. Aubrey and Mr. Brogie** in the last application round, so that your technical consultant has the full picture of this property and the unique issues it raises. These reports are identical to those already received by the Agency; if Agency members would like a second copy of anything we submit, please inform me, and I will provide a copy immediately.

I also understand that a site walk is planned for tomorrow afternoon. The Agency of course has near-total discretion in choosing what areas of a site they visit during a site walk. However, since this application has impacts not only on the subject property, but also on my clients' adjacent property, I would like to **invite the Agency to visit certain wetlands and a drainage "ditch" on my clients' property**. These are the wetlands that we believe will be adversely impacted by the application, and it would benefit the Agency to see these areas and understand the risks to them. These portions of my clients' property are not far from the property line, and visiting them will not

Mansfield IWA  
September 15, 2015  
Page 2

unreasonably extend the planned site walk. Mr. Brogie will be present at the site walk, and will be able to quickly and efficiently guide the Agency towards these areas.

Finally, I look forward to the review of this application by your engineering consultant. I hope that you and your staff will remember that, as interveners, my clients are entitled to certain due process rights above and beyond those enjoyed by simple neighbors, as the Connecticut Supreme Court noted in *Grimes v. Litchfield CC*, 243 Conn. 266 (1997). In light of that, please consider this letter a request pursuant to Conn. Gen. Stat. § 1-227 for notice of all meetings, formal and informal, between the applicants and the Agency or its staff and consultants. I look forward to having Mr. Audrey and Mr. Brogie work with your consultants and the applicants to bring about a fair and effective resolution of our concerns.

Please let me know if you have any questions or comments.

Very truly yours,



Caleb F. Hamel, Esq.

cc: Don Aubrey, PE  
Martin Brogie, LEP  
Mary & Ross Harper  
Edward Pelletier, Datum Engineering & Surveying

VERIFIED NOTICE OF INTERVENTION

In re: Resubdivision of Williams Heights  
101 East Road, Mansfield, CT

Town of Mansfield  
Inland Wetlands and  
Watercourses Agency

September 14, 2015

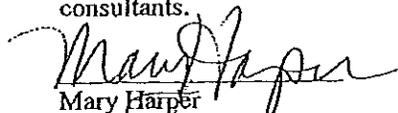
Pursuant to Conn. Gen. Stat. § 22a-19(a), Mary and Ross Harper (hereinafter "Intervenor") hereby intervene as a party in the above-referenced application and submit the following in support thereof:

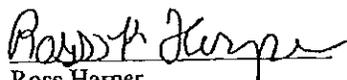
1. The above-referenced application was filed with the Mansfield Inland Wetlands and Watercourses Agency (hereinafter "Agency") by Christopher and Lindsey Niarhakos (hereinafter "Applicant") for a permit from the Agency.
2. The proposed development located at 101 East Road, Mansfield, CT (hereinafter "Property"), consists of a three (3) lot resubdivision with two (2) new homes and associated site improvements.
3. The Property consists of approximately 14.56 acres, including a substantial area of wetlands.
4. The soils on the site are frequently saturated with water and the project does not take this into consideration and does not provide for the proper treatment of runoff from the site.
5. This saturation is caused in part by the substantial runoff from the agricultural fields uphill from the Property, which the stormwater management system was not designed to accommodate.
6. This condition is exacerbated by the soils of the property, which include a shallow hardpan layer that drastically slows infiltration.
7. As a result of the saturation and hardpan layer of the soils, the planned detention basins will not infiltrate runoff as intended, and will instead intercept groundwater and flood, particularly in the wet seasons.
8. When these detention basins flood, they are reasonably likely to cause erosion and wash septic system effluent into wetlands on and off the property, depositing sediment and effluent in those wetlands.
9. The proposed development is therefore reasonably likely to cause unreasonable pollution, impairment, or destruction of the wetlands, watercourses, groundwater, and other natural resources of the State of Connecticut as follows: erosion, flooding, soil destabilization, damage to vegetation and impacts to wells and septic systems.
10. Further review of existing information, and of future information that may be provided by the applicant, is reasonably likely to show the existence of other causes of unreasonable pollution, impairment, or destruction of the wetlands, watercourses, groundwater, and other natural resources of the State of Connecticut.

WHEREFORE, the undersigned parties hereby intervene in this proceeding pursuant to Conn. Gen. Stat. § 22a-19(a) and state under oath that the above statements in this Verified Notice of Intervention are true

and correct to the best of their knowledge and belief.

AND WHEREFORE, as the undersigned persons are party to the proceedings before the Mansfield Inland Wetlands Agency, in the interest of due process and fundamental fairness they hereby request notice of all meetings, formal and informal, between the Applicant and the Agency and its staff and consultants.

  
Mary Harper

  
Ross Harper

Subscribed and sworn to before me this 14th day of September, 2015.



Notary Public  
My Commission Expires:

*Commissioner of Superior Court*



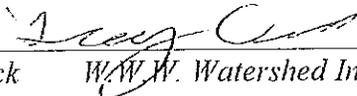
# TOWN OF WINDHAM WATER WORKS

174 Storrs Road  
Mansfield Center, CT 06250  
Tel. 860-465-3075 • FAX 860-465-3085

- Inland Wetlands Commission
- Zoning Commission
- Planning & Zoning Commission
- Zoning Boards of Appeals

TOWN:       Ashford       Chaplin       Eastford  
               Hampton      Mansfield      Pomfret  
               Union         Willington     Windham  
               Woodstock

INSPECTED BY:

  
\_\_\_\_\_  
*Troy Quick      W.W.W. Watershed Inspector*

DATE:                      September 4, 2015 WW File #M1515

The Windham Water Works has received notification of a proposed project per the requirements of Public Act 89-301.

### PROJECT DESCRIPTION:

3 lot subdivision with existing dwelling and 2 proposed lots for single family dwellings with on site septic and wells

Applicant: Christopher & Lindsey Niarhakos

### COMMENTS:

The Windham Water Works has reviewed the proposed project and with best management practices and with proper soil and erosion control measures throughout the duration, we would have no objections, we will monitor accordingly.





# Town of Mansfield

## Department of Planning and Development

Date: September 2, 2015

To: Mansfield Inland Wetlands Agency

From: Jennifer Kaufman, Inland Wetlands Agent

Subject: 101 East Road (File #W1557)  
C. and L. Niarhakos  
Description of work: 3-lot re-subdivision  
Map Date: 3/30/2015, Revised through 6/21/2015

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### Project Overview

The applicants propose to subdivide a 14.56-acre parcel into 3 lots. There is an existing single family dwelling located on the property and the applicants are proposing 2 new lots for single family dwellings east of the existing house. There are two major forested wetlands on the site. The wetland located on the southwest portion of the property is associated with the existing house lot, and no new activities are proposed here. The wetland that extends from the UConn property south onto the subject property divides lots two and three. Activity associated with the construction of the proposed two new homes will occur in the upland review area. The applicants propose to install a storm water drainage structure at an existing culvert on East Road. This will disturb 82 square feet of wetlands but will improve a damaged headwall at an existing drainage structure which currently poses a safety hazard along East Road. The wetlands in this location are a result of surface drainage.

Previously, the abutting property owners to the east have expressed concern that increased runoff from the proposed subdivision will adversely impact the wetlands. On August 3, 2015, the Agency denied the issuance of an Inland Wetlands License stating that the applicant had not provided sufficient information to allow the Agency to determine that the proposed activities will not have a significant adverse impact on the wetlands or watercourses and that this application is consistent with the Criteria for Decision outlined in Section 10.2 of the Mansfield Inland Wetlands and Watercourses Regulations; the purposes and policies of the Regulations; and Sections 22a-36 to 22a-45, inclusive, of the Connecticut General Statutes as required by Section 10.7 of the Regulations. The Agency stated that that the applicant needed to verify the extent of the upgradient, northerly watershed to demonstrate that the storm water management basins and swales are adequately sized to manage the runoff so as not to adversely impact wetlands. Because of the volume of the material presented on this application previously, staff recommends that the Agency hire an independent consultant to analyze and help the IWA understand the information presented in the application. Pursuant to section 8.6 of Mansfield's Inland Wetlands and Watercourses Regulations, Mansfield's fee schedule authorizes the Agency to hire independent consultants at the expense of an applicant when the Agency deems it necessary to do so.

- ☑ The project includes work in wetlands.
- ☑ The project includes work in the 150 foot upland review area.
- ☑ The project is located in a Public Water Supply Watershed.
- ☑ Natural Diversity Database has been checked and state and/or federal listed species or significant natural communities have not been identified on the property.

### Application Fees and Notifications

The applicant has paid the required application fee

The applicant has submitted copies of the notice mailed to neighbors and a list of abutters to be notified. Certified mail receipts must be submitted prior to action on the application.

The applicant has submitted copies of notices provided to the Connecticut DPH and Windham Water Works. Certified mail receipts must be submitted prior to action on the application.

### Receipt Motion

\_\_\_\_\_ MOVES, \_\_\_\_\_ seconds to receive the application submitted by C. and L. Niarhakos (IWA File #1557) under the Inland Wetlands and Watercourses Regulations of the Town of Mansfield for a 3-lot re-subdivision on property located at 101 East Road as shown on a map dated 3/30/2015 and revised through 6/21/2015 and as described in an application submitted on 8/30/2015, refer said application to staff and the Conservation Commission for review and comments, schedule a Public Hearing for November 2, 2015, and authorize staff to solicit proposals from independent consultants so that the Agency may hire one per section 8.6 of the Mansfield Inland Wetlands and Watercourses Regulations.

APPLICATION FOR PERMIT  
MANSFIELD INLAND WETLANDS AGENCY  
4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268  
TEL: 860-429-3330 OR 860-429-3015x6204  
FAX: 860-429-6863

FOR OFFICE USE ONLY  
File # 1557  
W \_\_\_\_\_  
Fee Paid \_\_\_\_\_  
Official Date of Receipt \_\_\_\_\_

*Applicants are referred to the Mansfield Inland Wetlands and Watercourses Regulations for complete requirements, and are obligated to follow them. For assistance, please contact the Inland Wetlands Agent at the telephone numbers above.*

Please print or type or use similar format for computer; attach additional pages as necessary.

**Part A - Applicant**

Name Christopher & Lindsey Niarhakos

Mailing Address 68 Brookside Lane

Mansfield Center, CT Zip 06250

Phone 860-617-5396 Email chris\_niarhakos@hotmail.com  
and/or lindsey.niarhakos@gmail.com

**Title and Brief Description of Project**

3 lot subdivision with existing house lot and 2 proposed lots for single family  
dwelling

Location of Project 101 East Road

Intended Start Date Fall 2015

**Part B - Property Owner (if applicant is the owner, just write "same")**

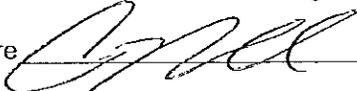
Name same as applicant

Mailing Address \_\_\_\_\_

Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature  date 8.30.15

Applicant's interest in the land: (if other than owner) \_\_\_\_\_

**Part C - Project Description (attach extra pages, if necessary)**

1) Describe in detail the proposed activity here or on an attached page. (See guidelines at end of application – page 6.)

Please include a description of all activity or construction or disturbance:

- a) in the wetland/watercourse
- b) in the area *adjacent* to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is *off* your property  
See attached sheet

2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

- a) in the wetland/watercourse
- b) in the area *adjacent* to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is *off* your property  
See attached sheet

3) Describe the type of materials you are using for the project: \_\_\_\_\_  
See attached sheet

- a) include *type* of material used as fill or to be excavated \_\_\_\_\_
- b) include *volume* of material to be filled or excavated \_\_\_\_\_

4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).

Installation of silt fencing prior to start of construction.

(see notes on plans for further E & S details)

**Part D - Site Description**

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)

See attached letter and Site Analysis prepared by the landscape architect,

John Alexopoulos.

**Part E - Alternatives**

Have you considered any alternatives to your proposal that would meet your needs and might have less impact on the wetland/watercourse? Please list these alternatives.

The proposed house sites were designed to avoid any disturbance of wetland soils on this site.

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**Part F - Map/Site Plan (all applications)**

1) Attach to the application a map or site plan showing **existing conditions** and the **proposed project** in relation to wetland/ watercourses. Scale of map or site plan should be 1" = 40'; if this is not possible, please indicate the scale that you are using. A sketch map may be sufficient for small, minor projects. (See guidelines at end of application – page 6.)

2) Applicant's map date and date of last revision March 30, 2015 & Revised: June 21, 2015

3) Zone Classification RAR-90 (Per Staff Comments)

4) Is your property in a flood zone?  Yes  No  Don't Know

**Part G - Major Applications Requiring Full Review and a Public Hearing**

See Section 6 of the Mansfield Regulations for additional requirements.

**Part H - Notice to Abutting Property Owners**

1) Attach list of abutters, name, address

2) **Proof of Written Notice to Abutters.** You must notify abutting (neighboring) property owners (any property immediately contiguous with the subject property , including those across the street) by certified mail, return receipt requested, stating that a wetland application is in progress, and that abutters may contact the Mansfield Inland Wetlands Agent for more information. Include a brief description of your project. **Postal receipts of your notice to abutters must accompany your application.** (This is not needed for exemptions).

**Part I - Additional Notices, if necessary**

Notice to Windham Water Works and CT Department of Public Health is attached. If this application is in the public watershed for the Windham Water Works (WWW), you must notify the WWW and the Department of Public Health of your project within 7 days of sending the application to Mansfield--sending it by certified mail, return receipt requested. Contact the Mansfield Inland Wetlands Agent to find out if you are in this watershed.

Notice to Adjoining Town. If your property is within 500 feet of an adjoining town, you must also send a copy of the application, on the same day you sent one to Mansfield, to the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.

The Statewide Reporting Form (attached) shall be part of the application and specified parts must be completed and returned with this application.

**Part J - Other Impacts To Adjoining Towns, if applicable**

- 1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site? \_\_\_ Yes X No \_\_\_ Don't Know
  
- 2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality? \_\_\_ Yes X No \_\_\_ Don't Know
  
- 3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality? \_\_\_ Yes X No \_\_\_ Don't Know

**Part K - Additional Information from the Applicant**

Set forth (or attach) any other information which would assist the Agency in evaluating your application. *(Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)*

**Part L - Filing Fee**

Submit the appropriate filing fee. (Consult Wetlands Agent for the fee schedule available in the Mansfield Inland Wetlands and Watercourses Regulations.)

\_\_\_ \$1,000. X \$750. \_\_\_ \$500. \_\_\_ \$250. \_\_\_ \$125. \_\_\_ \$100. \_\_\_ \$50. \_\_\_ \$25.

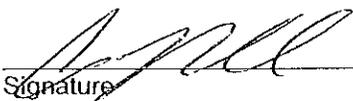
X \$60 State DEP Fee = \$810.

*Note: The Agency may require you to provide additional information about the regulated area which is the subject of the application, or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.*

**Certification**

I hereby certify that:

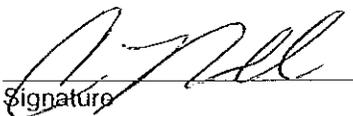
- I am familiar with the information contained in this form and that such information is true and correct to the best of my knowledge.
- I understand the penalties for obtaining a permit through deception or through inaccurate or misleading information.

  
Signature

8.30.15  
Date

**Authorization to Enter Property**

The undersigned hereby consent to necessary and proper inspections of the above-mentioned property by members and agents of the Inland Wetlands Agency at reasonable times, both before and after the permit in question has been issued by the Agency.

  
Signature

8.30.15  
Date

Part C - Project Description

1)

Lot #1 - existing dwelling - no proposed activity

Lot#2 -

- a) no proposed activity with wetland soils
- b) proposed dwelling - 61' at its closest point
  - proposed septic system - 66' at its closest point
  - proposed reserve septic area - 55' at its closest point
  - proposed driveway - 108' at its closest point
  - proposed foundation and curtain drain - 23' at its closest point
  - proposed storm water/ground water recharge area - 10' at its closest point

Lot #3 -

- a) storm water drainage structure at existing culvert
- b) proposed dwelling - 82' at its closest point
  - proposed septic system - 145' at its closest point
  - proposed reserve septic area - 115' at its closest point
  - proposed driveway - 4' at its closest point
  - proposed well - 85' at its closest point
  - proposed storm water/ground water recharge area - 111' at its closest point

2)

Lot #1 - a) none b) none

Lot #2 - a) none b) 33,000 sq. ft.

Lot #3 - a) 82 sq. ft. b) 33,200 sq. ft.

3)

Gravel fill for driveways, septic sand for septic systems, stone rip-rap at outlets and overflow of proposed storm water/ground water recharge areas.

a) gravel, sand and rip-rap

b) Lot #2 - septic -100 cu. yds.

driveway - 100 cu. yds.

storm water/ground water recharge area - 270 cu. yds. (to be used on site)

Lot #3 - septic - 15 cu. yds.

driveway - 100 cu. yds.

storm water/ground water recharge area - 200 cu. yds. (to be used on site)

### Project Description Guidelines for Part C – page 3

1. Explain exactly what work you propose to do and how close it will be to a wetland or watercourse.
2. Describe area of disturbance and volume and type of material to be filled or excavated. How much wetlands will be disturbed? Non-wetland areas nearby?
3. Does the area of activity drain toward the wetland?
4. Are there alternatives that you considered but eliminated for specific reasons?
5. Describe briefly the construction methods. What kind of heavy equipment will be used? When will the work be done?
6. How are you protecting the wetlands and watercourses against disturbance that will result from construction?
7. Do you have any knowledge of a previous wetlands application for this property? If yes, please explain.

### Sketch Map or Site Plan Guidelines for Part F – page 4

The following 10 details are required for every application:

1. Applicant's name
2. Date and revision date, if applicable.
3. North arrow and scale of map.
4. Abutting road with road name shown on it.
5. Property lines --if a large property, at least those lines within 200' of the proposed work.
6. Wetland and watercourse locations (including those off your property) within 150' of your proposal--draw a line showing the part of the project that is the closest distance to wetlands and indicate distance in feet.
7. Existing buildings, driveways, well, septic and physical features.
8. Proposed work in detail, including all areas of construction, grading/regrading, excavation, filling. Include stockpiling and staging area locations if applicable. The exact location must be shown of all areas that will be disturbed.
9. Show roof and footing drains by drawing locations.
10. Show location of Erosion & Sedimentation controls (silt fence or hay bale protections) together with any other measures that will protect the wetland/watercourse areas.

Include any available information that may assist the Agency in understanding your proposal.

**YOUR PERMIT, WHEN GRANTED, IS VALID FOR 6 YEARS; ONCE STARTED, WORK MUST BE FINISHED WITHIN THE SPECIFIC TIME PERIOD AS SPECIFIED IN THE APPROVAL MOTION UNLESS OTHERWISE APPROVED. SPECIFIC WRITTEN REQUESTS MUST BE MADE FOR EXTENSIONS OR RENEWALS (See Section 7.9) rev. 12/21/98**

October 1, 2014

To: Datum Engineering  
132 Conantville Road  
Mansfield Center, CT 06250

Subject: East Road, Mansfield, CT Proposed House Lots – Significant Trees

I reviewed 2 proposed house sites at the East Road property. I have visited this site on a number of occasions performing a site assessment. In addition, late this September 2014 I returned in order to assess any trees of significant size or species within the proposed house lots.

The only trees of large diameter, mostly oaks, are found along the right of way on East Road and some on the western boundary near the existing residence.

The proposed house sites are within a thinned woods. Most of the trees are small in diameter with only a couple of trees around 12” in diameter. None were flagged as significant.

September 7, 2014

**Site Analysis: 101 East Road, Mansfield, CT**

I visited the property several times during the week of 14<sup>th</sup> of April, 2014 and then again in late August of this year.

The property is located on the north side of East Road adjacent the University of Connecticut Research Farm. The property of 14.8 acres has an existing residence and driveway on its western border adjacent to the University of Connecticut property. The property lies within a RAR 90 residential zone.

There are no outbuildings associated with the residence, and no activity of any consequence related to the use of the property such as large open lawns or gardens, etc.

Approximately twenty-eight percent of the property is wetland according to a field survey by John Ianni, soil scientist. The accompanying map outlines two major areas of wetland. Significantly, these two areas are either associated with the existing residence, close to the front SW corner and next to the University property and in the rear center of the property. The wetland in the rear extends over half the distance from the rear property line towards the front property line.

The property is essentially wooded, nearly full canopied including the wetlands and even close to the existing residence. The property consistently slopes from the western boundary to the eastern boundary, with the gentler slope percentages in most of the property below the existing residence.

**Significant Assets:**

- The large wetland adjacent the northern boundary.
- Stone walls on nearly all of the boundaries, an additional one just below the residence
- Contiguous woodland on the property and to the rear of the property.
- Adjacent University property.

**Constraints:**

- Approximately 28 % of the parcel is unbuildable with regards to wetlands.
- There appears to be a small area of slopes of 15% near the southeast corner.
- Stony soils – numerous glacial erratics.
- Sight line restriction on most of the property, except near the existing driveway as well as the southeast corner.

**Considerations:**

- There are over 5 acres of dry land between the large wetland and the front property not including the area around the existing residence. Since the test pits proved septic field capability and given the frontage requirement, three lots in addition to the existing residence appear reasonable. Nearly all of this area is within the wetland review.

**Open Space allotment/ possible location:**

There are 2 options, traditional layout (2 acre lot with 200' frontage) or an open space or cluster subdivision which waives the frontage requirement, etc.

Traditional layout requires 15% dedication of Open Space or often a conservation easement dedication of 2.2 Acres. Cluster layout requires 40% open space or 5.9 Acres.

In order to get the 15% open space dedication that includes no greater than 28% wetland, 2.2 acres are available in the northwest corner of the property, mostly consisting of dry land. In the cluster subdivision dedicating the rear of the lot would be best. This dedication would join University of Connecticut property as well as the wetland that continues towards Hanks Hill Road.

**Topography:**

The site basically is characterized by a topography that slopes moderately down from the highest point along the western boundary to the eastern boundary. The difference in elevation is around 70' from west to east. There is an area near East Road and in the southeast corner of the property that has some 15% slopes. The DAE can be expanded to include these slopes. Parts of the BAE can be as narrow as 75' in one or two places, so it is possible to outline a buildable BAE.

There are no slopes 20% or greater on the property which would be factored in along with the wetlands for percentage of unbuildable land as part of an open space dedication.

**Vegetation:**

The 1934 aerial photograph of the property shows some of the property in open pasture. There is a complete canopy of deciduous trees throughout including the wetland, excepting a very small area at the existing residence and driveway. A few tall and thin white pine are located west of the residence near the University border. Another lone thin white pine is at the lower southeast corner. The canopy trees consist of second growth ash, some oak, red maple and sweet birch mainly. There are young saplings present throughout, but still sparse under canopy as most of the property outside the main wetland is open to view. The youngest trees are within the large wetland and most of the largest trees are near the western boundary and the existing residence. Only a few scattered trees are around 24" in diameter at breast height. There is little marketable timber apparent. A cutting likely occurred in the past and there are a few stumps evident that might have been taken within ten years. The wetlands are mostly red maple and sweet birch and shrubs such as spicebush.

**Stone Walls:**

Stone walls are significant in that they mark the property boundaries for the most part. There is a line of wall that starts midway along the existing driveway and extends northward to just beyond the existing drive turn-around below the residence. All the walls are typically rubble and marked a pasture enclosure for the most part. Very short lengths of wall are found along East Road on both ends of the front property

line. Most likely the front wall extended the full length of the property, but nearly all was taken long ago.

**Views:**

No significant view into or out from the site.

**Existing Open Space:**

Directly across East Road is a Mansfield Open Space property. This doesn't offer an opportunity to connect in some way to any proposed open space on this property.

**Soils:**

Test pits confirm suitability for septic fields.

Stony throughout means some difficulty in excavation. No visually apparent ledge.

**Species endangered, threatened or of special concern:**

There are no species indicated within the property area or adjacent the property according to the State of Connecticut Natural History Database.

**Solar access:**

The orientation of proposed houses likely will orient to the south. However, given the continuous forest and a high canopy on both sides of East Road, and even with some clearing for house and septic field, solar gain will be somewhat limited.



# Department of Planning and Development

**Date:** December 1, 2015  
**To:** Mansfield Inland Wetlands Agency  
**From:** Jennifer Kaufman, Inland Wetlands Agent  
**Subject:** Receipt of New Application for Change to the Inland Wetlands Map  
Hunting Lodge Road (parcel Id 15.21.3) (IWA File #1559)  
Ponde Place LLC  
Description of work: Map Amendment

---

## Project Description

Pursuant to section 15.0 of the regulations, the applicant is petitioning to change the Mansfield Inland Wetlands and Watercourses Map on an approximately 45-acre residential parcel located on the west side of Hunting Lodge Road (parcel id 15.21.3). This request is based on a wetland delineation by George Logan, a Registered Soil Scientist and Professional Wetland Scientist. In all petitions to amend the Town map, a public hearing must be held.

Section 8.6 of Mansfield's Inland Wetlands and Watercourses Regulations and the Fee Schedule established in Article V, Chapter 122, Section 122-12 of the Mansfield Code of Ordinances, authorizes the Agency to hire independent consultants at the expense of an applicant when the Agency deems it necessary to do so. Staff recommends that the Agency hire an independent consultant to peer review the proposed change to the Town's Wetland Map. Staff requested estimates from 5 qualified independent consultants. Due to potential conflicts and time constraints, only one consultant, Pietras Environmental Group, was able to provide an estimate. The principal, Thomas Pietras is a Professional Soil Scientist and Professional Wetland Scientist, with over 34 years of experience and has done numerous peer reviews of this type. I have attached his estimate and resume for your consideration. I have checked references and this firm comes highly recommended. I recommend that we engage their services.

- The project includes work in wetlands. (NA)
- The project includes work in the 150 foot upland review area. (NA)
- The project is located in a Public Water Supply Watershed. (NA)

## Application Fees and Notifications

- The applicant has paid the required application fee
- The applicant has submitted copies of the notice mailed to neighbors and a list of abutters to be notified. Certified mail receipts must be submitted prior to action on the application.



# Department of Planning and Development

## Proposed Receipt Motion

If the Agency agrees with the staff recommendation, the following motion is in order.

\_\_\_\_\_ MOVES, \_\_\_\_\_ seconds to:

- Receive the application to change or amend the Inland Wetlands and Watercourses Map, Mansfield, CT, submitted by Ponde Place LLC (IWA File #1559) under the Inland Wetlands and Watercourses Regulations of the Town of Mansfield on property located on the west side of Hunting Lodge Road (parcel Id 15.21.3) as shown on a map dated 2/5/2005 and revised through 11/30/2015 and as described in application submissions;
- Refer said application to staff and the Conservation Commission for review and comments;
- Schedule a Public Hearing for February 1, 2016; and
- Engage the services of Pietras Environmental Group, LLC. to provide independent technical peer review on the application.

Pursuant to Section 8.6 of Mansfield's Inland Wetlands and Watercourses Regulations, all fees incurred for this review will be the responsibility of the applicant. A deposit in the amount of \$1,300.00 shall be provided by the applicant prior to issuance of a notice to proceed. Any unspent funds shall be returned to the applicant.

File # \_\_\_\_\_  
Fee Paid \_\_\_\_\_  
Date Submitted \_\_\_\_\_



# Mansfield Inland Wetlands Agency

Application to Change or Amend the Inland Wetlands and Watercourses Map,  
Mansfield, Connecticut

Pursuant to Section 15.0 of the Mansfield Inland Wetlands and Watercourses Regulations, all petitions to amend the Inland Wetland and Watercourses regulations shall be subject to a public hearing and payment of the fee (\$500). Any person who submits a petition to amend the Mansfield Inland Wetlands and Watercourses Map, shall bear the burden of proof for all requested map amendments. The Fee Schedule established in Article V, Chapter 122, Section 122-12 of the Mansfield Code of Ordinances, authorizes the Agency to hire independent consultants at the expense of an applicant when the Agency deems it necessary to do so.

1. Applicant's Name Storrs Lodges, LLC  
Address 30 Dorset Crossing Dr, Suite 600, Simsbury CT 06070  
Phone Number 860-217-1700 email tony@thekeystonecompanies.com
2. Applicant's interest in the property: Owner Lessee Optionee Other
3. Property Owner(s)' Name Ponde Place, LLC  
Address 30 Dorset Crossing Dr, Suite 600, Simsbury CT 06070  
Phone Number 860-217-1700 email tony@thekeystonecompanies.com
4. Location of Property (include street address) and Tax Parcel Id (Map, Block, Lot):  
Hunting Lodge Rd Parcel ID 15.21.3
5. Reason for the requested action:  
Amend town official wetland + watercourses map to allow for future compact residential development

The following must be submitted as part of this petition:

- The wetlands and watercourses from the Official Map
- The proposed amendment
- Documentation by a certified soils scientist of the distribution and types of wetland soils and watercourses on subject property. (Please include the Soil Scientist's Certification)
- A Map certified by a Connecticut Licensed Land Surveyor and the Soil Scientist indicating the watercourses and flag locations set by the soil scientist defining the boundaries of wetland soil types.
- Map(s) indicating any proposed development of the land in relation to existing and proposed wetland and watercourse boundaries.

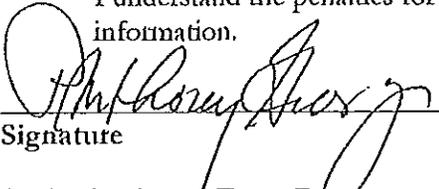
In addition, please provide the following information:

- Total Area of Wetlands on property from Official Map: 15.29 Ac / 666,232 S.F. (Ac/SF)
- Total Length of Watercourse from Official Map: 0 (LF)
- Total Area of Wetlands as Flagged by Soil Scientist: 6.68 Ac / 291,172 S.F. (Ac/SF)
- Total Area of Wetlands as flagged by Soil Scientist: 0 (Ac/SF)  
*6' High WATER BODY*
- Total Length of Watercourse as determined by Survey: 1,439 L.F. (LF)
- Total Area of Open Water as determined by Survey: 0 (Ac/SF)
- Wetland Net Change (exclude wetland to open water): -8.61 Ac / -375,060 S.F. (Ac/SF)
- Watercourse Length Net Change: ADD 1,439 L.F. (LF)
- Open Water Area Net Change: 0 (Ac/SF)
- Total Land Area of the Property: 45.93 Ac / 2,000,645 S.F. (Ac/SF)

**Certification**

I hereby certify that:

- I am familiar with the information contained in this form and that such information is true and correct to the best of my knowledge.
- I understand the penalties for obtaining a permit through deception or through inaccurate or misleading information.

  
Signature

11-30-15  
Date

**Authorization to Enter Property**

The undersigned hereby consent to necessary and proper inspections of the above-mentioned property by members and agents of the Inland Wetlands Agency at reasonable times, both before and after the permit in question has been issued by the Agency.

  
Signature

11-30-15  
Date

Property Details

Number of records found: 1

One record is displayed for each address found at the selected property. Multiple addresses may occur in the case of condominiums.

**HUNTING LODGE RD**  
ID: 15.21.3

[View Property Record Card](#)

PARCEL ID: 15.21.3  
LOCATION: HUNTING LODGE RD  
LAST SALE DATE: 2013-07-15  
CO-OWNER:  
MAILING ADDRESS LINE 2:  
MAILING ADDRESS CITY: SIMSBURY  
MAILING ADDRESS ZIP: 06070  
ROOF STRUCTURE:  
HEAT TYPE:  
BUILDING STYLE:  
LANDUSE DESCRIPTION: Res. Vacant Land  
NEIGHBORHOOD:  
LAND ASSESSMENT: 78800  
EXTRA FEATURES ASSESSMENT: 0  
BOOK / PAGE: 753 / 405  
APPROXIMATE YEAR BUILT: 1900  
NUMBER OF ROOMS:  
NUMBER FULL BATHS:  
BUILDING AREA EFFECTIVE: 0

ACCOUNT NUMBER: 15 21 3  
LAND AREA: 45.9  
OWNER: PONDE PLACE LLC  
MAILING ADDRESS LINE 1: 30 DORSET CROSSING DR STE 600  
MAILING ADDRESS LINE 3:  
MAILING ADDRESS STATE: CT  
MAILING ADDRESS COUNTRY:  
ROOF COVERING:  
HEAT FUEL:  
LANDUSE CODE: 600  
ZONING: RAR90  
BUILDING ASSESSMENT: 0  
OTHER BUILDING ASSESSMENT: 0  
TOTAL ASSESSMENT: 78800  
LAST SALE VALUE: 0  
NUMBER OF STORIES:  
NUMBER OF BEDROOMS:  
NUMBER OF HALF BATHS:  
BUILDING AREA GROSS: 0



Owner: PONDE PLACE LLC  
Co-Owner:  
Address: 30 DORSET CROSSING DR STE 600  
IMSBURY CT 06070

Assessment: Total: 78800  
Building: 0 Land: 78800 Yard: 0

Sales History

Seller  
ASPORTAS ABRAHAM EST ET AL  
REFERENCE  
EYSTONE COMPANIES LLC THE  
PONDE PLACE LLC

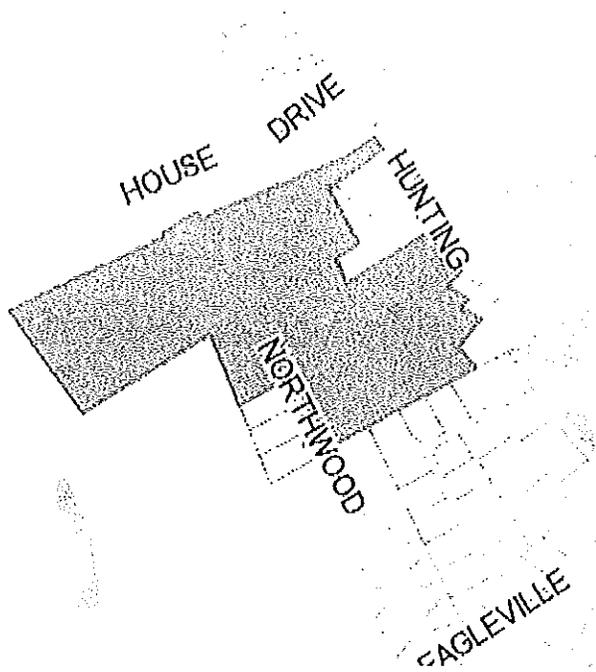
Book / Page  
300/ 192  
370/ 413  
563/ 91  
720/ 296  
763/ 405

Sale Date  
1990-08-22  
1996-03-06  
2004-12-01  
2012-01-30  
2013-07-15

Sale Price  
  
  
300000



MainStreetGIS, LLC  
[www.mainstreetgis.com](http://www.mainstreetgis.com)



**Additional Information**  
Land Area: 45.9 AC Zoning: RAR90  
Land Use: 500 - Res. Vacant Land  
Neighborhood:

**Building Information**  
Style:  
Year Built: 1900  
Rooms: Bedrooms:  
Baths: Half Baths:  
Living Area:  
Gross Area:

Stories:  
Heat Fuel:  
Heat Type:  
AC Type:  
Roof Structure:  
Roof Covering:

**Extra Features**  
Description

Area / Units

Assessment

**Sub Areas**  
Description

Living Area

Gross Area



REPORT DATE: November 25, 2015  
PAGE 1 OF 3

REMA ECOLOGICAL SERVICES, LLC  
164 East Center Street, Suite 8  
Manchester, CT 06040  
860.649.REMA (7362)

## ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT

**PROJECT NAME & SITE LOCATION:**

+/- 45.93 acres  
Hunting Lodge Road  
Mansfield, CT

REMA Job No.: 15-1860-MNS18

Field Investigation Date(s): 10/1, 10/9, 10/10/2015

Field Investigation Method(s):

- Spade and Auger  
 Backhoe Test Pits  
 Other: \_\_\_\_\_

**REPORT PREPARED FOR:**

EDR  
999 South Shady Grove Road  
Suite 600  
Memphis, TN 38120

**Field Conditions:**

Weather: Mostly sunny to cloudy, 50s to 70s

Soil Moisture: low-moderate

Snow Depth: none

Frost Depth: none

**Purpose of Investigation:**

- Wetland Delineation/Flagging in Field  
 Wetland Mapping on Sketch Plan or Topographic Plan  
 High Intensity Soil Mapping by Soil Scientist  
 Medium Intensity Soil Mapping from *The Soil Survey of Connecticut* Maps (USDA-NRCS)  
 Other: \_\_\_\_\_

Base Map Source: CT Soil Survey web (USDA-NRCS) Figure A (attached)

Wetland Boundary Marker Series: RES-A-1 to RES-A-40 (open line), RES-B-1 to RES-B-28 (open line), RES-C-1 to RES-C-51 tied to RES-2C-1 to RES-2C-28 tied to RES-3C-1 to 3C-50, RES-1C-1 to RES-1C-13, and RES-4C-1 to RES-4C-36 (all open lines)

General Site Description/Comments: The "study area" or "site" is a roughly 49.93-acre, residentially-zoned parcel, westerly of Hunting Lodge Road, and northerly, easterly, and westerly of the northern terminus of Northwood Road, in Mansfield, CT. The site is predominately wooded and undisturbed, except for historic disturbances associated with filling just northerly of the terminus of Northwood Road, and with a crossing over the site's eastern wetland corridor and stream to connect Hunting Lodge Road with Northwood Road. The soils within the study area are both disturbed and undisturbed in nature, and are derived from glacial till (i.e. unstratified sand, silt & rock), both with and without a hardpan, and with rocky/sandy fill in the areas noted. The disturbed upland soils are identified as the Udorthents (306) soil mapping unit. The undisturbed upland soils are the well drained Paxton and Montauk (85), Canton and Charlton (60), and Charlton and Chatfield (73) soil series complexes, and the moderately well drained Woodbridge (46) soil series, while the undisturbed wetland soils belong to the poorly and very poorly drained Ridgebury, Leicester, and Whitman (3) soil series complex. The site's regulated wetland areas include a seasonally saturated to seasonally flooded eastern forested corridor associated with an intermittent stream, tributary to Eagleville Brook, and western forested wetlands, including a hillside seep and vernal pool habitat, that drain westerly to Cedar Swamp Brook. All of the forested wetlands are red-maple dominated swamps, with typical understory species (e.g. spicebush, highbush blueberry). However, the eastern forested wetland understory is dominated by Japanese barberry, and invasive shrub.

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT (CONTINUED)

PROJECT NAME & SITE LOCATION: +/- 45.93 acres  
Hunting Lodge Road, Mansfield, CT

SOIL MAP UNITSUpland Soils

**Montauk loam (85).** This series consists of very deep, well drained soils formed in till derived primarily from granitic materials. These soils are on upland till plains and moraines. Slope ranges from 0 to 35 percent. Saturated hydraulic conductivity is moderately high or high in the solum and low to moderately high in the substratum. Mean annual temperature is about 49 degrees F, and mean annual precipitation is about 45 inches. Thickness of the solum and depth to the firm till substratum typically ranges from 20 to 38 inches but the range currently includes 18 to 38. Rock fragments range from 3 to 35 percent in the solum and 5 to 50 percent in the C horizon. The soil ranges from extremely acid to moderately acid throughout.

**Paxton fine sandy loam (85).** This series consists of deep, well drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level to very steep soils on till plains, low ridges and drumoidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. In tilled areas, these soils have a dark brown fine sandy loam surface layer 8 inches thick. The subsoil from 8 to 26 inches is dark yellowish brown and olive brown fine sandy loam. The substratum from 26 to 60 inches is olive, very firm and brittle gravelly fine sandy loam.

**udorthents (306).** This soil mapping unit consists of well drained to moderately well drained soils that have been altered by cutting, filling, or grading. The areas either have had two feet or more of the upper part of the original soil removed or have more than two feet of fill material on top of the original soil. udorthents or Made Land soils can be found on any soil parent material but are typically fluvial on glacial till plains and outwash plains and stream terraces.

**Woodbridge fine sandy loam (46).** This series consists of deep, moderately well drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level to moderately steep soils on till plains, low ridges and drumoidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. In tilled areas, these soils typically have a very dark grayish brown fine sandy loam surface layer 7 inches thick. The subsoil from 7 to 30 inches is dark yellowish brown and light olive brown fine sandy loam, mottled below 18 inches. The substratum from 30 to 60 inches is light olive brown, very firm and brittle gravelly fine sandy loam.

**Charlton very stony fine sandy loam (73).** This series consists of very deep, well drained coarse-loamy soils formed in friable, glacial till on uplands. They are nearly level to very steep soils on till plains and hills. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. In tilled areas, these soils have a surface layer of dark brown fine sandy loam 8 inches thick. The subsoil from 8 to 26 inches is yellowish brown fine sandy loam and sandy loam. The substratum from 26 to 60 inches or more is grayish brown gravelly fine sandy loam.

**Chatfield loam (73).** This series consists of moderately deep, well drained, and somewhat excessively drained soils formed in till. They are nearly level to very steep soils on glaciated plains, hills, and ridges. Slope ranges from 0 to 70 percent. Crystalline bedrock is at depths of 20 to 40 inches. Permeability is moderate or moderately rapid. In tilled areas, these soils have a surface layer that is very dark to dark grayish brown loam up to 8 inches thick. The subsoil from 8 to 26 inches is brown, flaggy silt loam.

**Canton stony fine sandy loam (61).** This series consists of deep, well drained soils formed in a coarse-loamy mantle underlain by sandy glacial till on uplands. They are nearly level to very steep soils on till plains and hills. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically, these soils have a surface layer of very dark grayish brown fine sandy loam 2 inches thick. The subsoil from 2 to 23 inches is yellowish brown fine sandy loam, gravelly fine sandy loam and gravelly sandy loam. The substratum from 23 to 60 inches is pale brown gravelly loamy sand.

ON-SITE SOIL INVESTIGATION & WETLAND DELINEATION REPORT (CONTINUED)

PROJECT NAME & SITE LOCATION: +/- 45.93 acres  
Hunting Lodge Road, Mansfield, CT

SOIL MAP UNITSWetland Soils

**Ridgebury fine sandy loam (3).** This soil series consists of deep, poorly and somewhat poorly drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level to moderately steep soils on till plains, low ridges and drumloidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically these soils have a black sandy loam surface layer 6 inches thick. The mottled subsoil from 6 to 16 inches is olive gray sandy loam. The mottled substratum from 16 to 60 inches is a light olive brown and olive, very firm and brittle gravelly sandy loam.

**Leicester fine sandy loam (3).** This series, which in some Connecticut counties is found only in complex with the Ridgebury and Whitman series, consists of deep, poorly drained loamy soils formed in friable glacial till on uplands. They are nearly level to gently sloping soils in drainage ways and low lying positions on till covered uplands. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically, these soils have a surface layer of black fine sandy loam 6 inches thick. The subsoil from 6 to 23 inches is grayish brown, mottled fine sandy loam. The substratum from 26 to 60 inches or more is dark yellowish brown, mottled, friable, gravelly fine sandy loam.

**Whitman fine sandy loam (3).** This series, which in some Connecticut counties is only mapped in complex with the Ridgebury and Leicester series, consists of deep, very poorly drained soils formed in a coarse-loamy mantle underlain by firm, compact glacial till on uplands. They are nearly level and gently sloping soils on till plains, low ridges and drumloidal landforms. The soils formed in acid glacial till derived mainly from schist, gneiss or granite. Typically these soils have a black fine sandy loam surface layer 8 inches thick. The mottled subsoil from 8 to 15 inches is gray sandy loam. The mottled substratum from 15 to 60 inches is firm, olive gray to gray dense glacial till.

Any accompanying soil logs and soil maps, and the on-site soil investigation narrative are in accordance with the taxonomic classification of the National Cooperative Soil Survey of the USDA Natural Resource Conservation Service, and with the Connecticut Soil Legend (DEP Bulletin No.5, 1983), as amended by USDA-NRCS. Jurisdictional wetland boundaries were delineated pursuant to the Connecticut General Statutes (CGS Sections 22a-36 to 22a-45), as amended. The site investigation was conducted and/or reviewed by the undersigned Registered Soil Scientist(s) [registered with the Society of Soil Scientists of Southern New England (SSSSNE) in accordance with the standards of the Federal Office of Personnel Management].

Respectfully submitted,

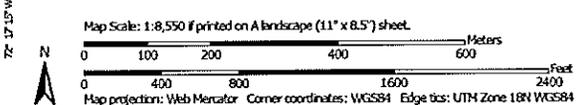
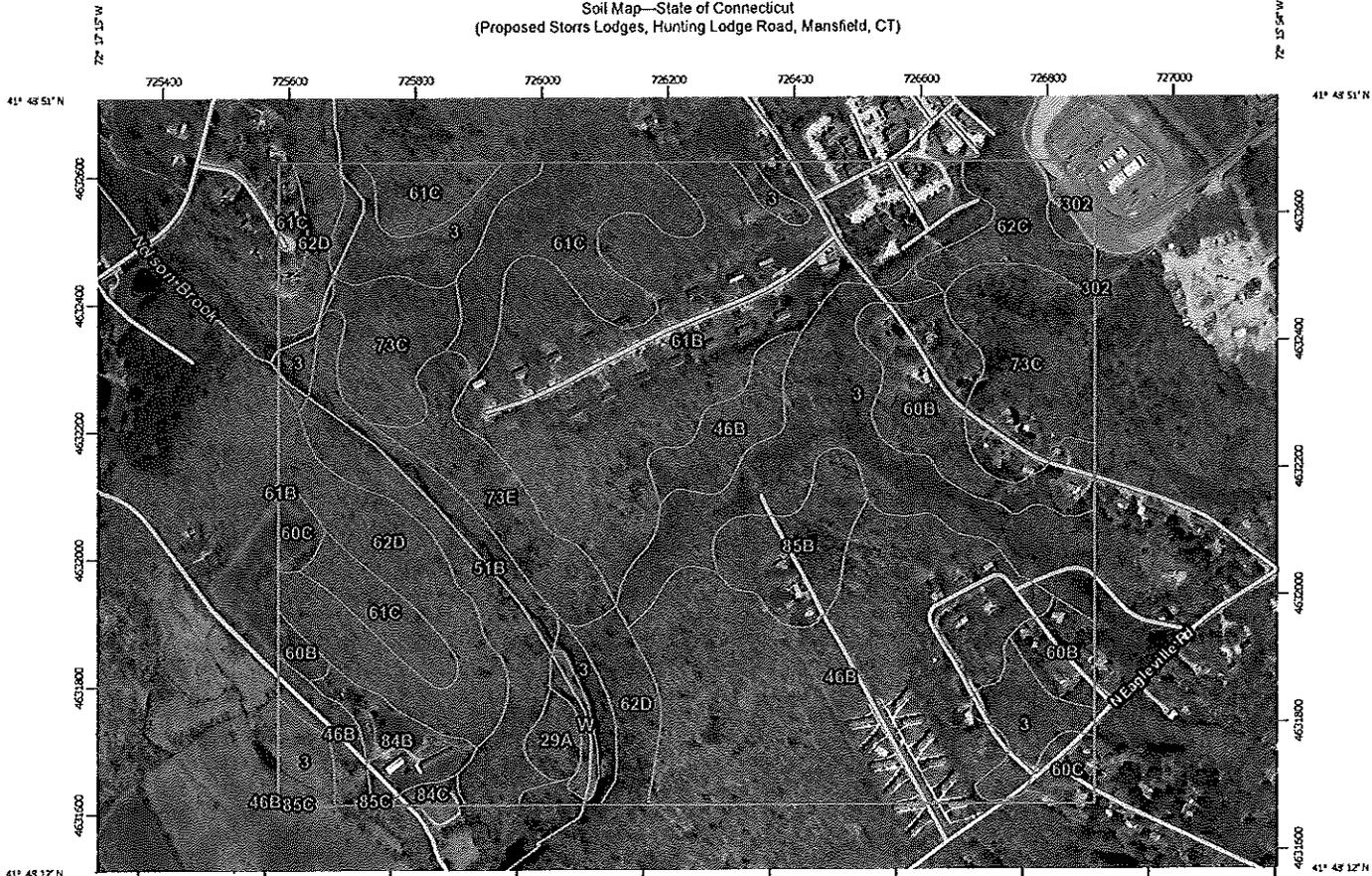
REMA ECOLOGICAL SERVICES, LLC



George T. Logan, MS, PWS, CSE  
Registered Soil Scientist, Professional Wetland Scientist  
Field Investigator/Senior Reviewer



Soil Map—State of Connecticut  
 (Proposed Storrs Lodges, Hunting Lodge Road, Mansfield, CT)



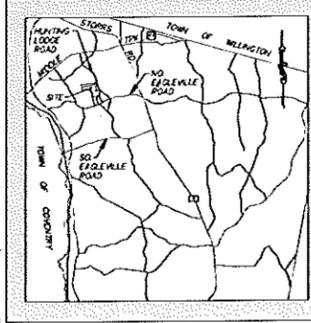
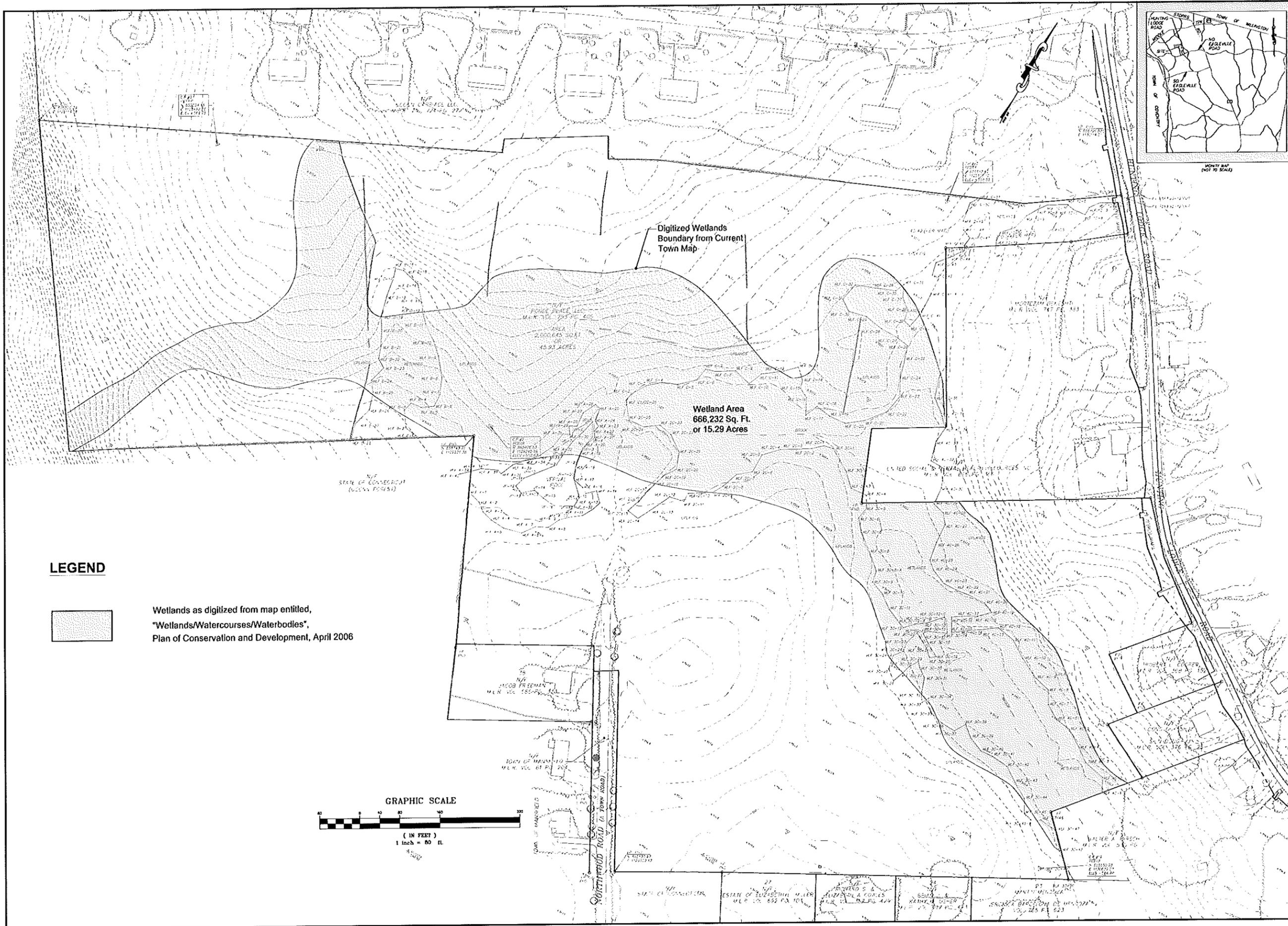
Soil Map—State of Connecticut  
(Proposed Storrs Lodges, Hunting Lodge Road, Mansfield, CT)

MAP LEGEND	MAP INFORMATION	
<p><b>Area of Interest (AOI)</b></p> <p> Area of Interest (AOI)</p> <p><b>Soils</b></p> <p> Soil Map Unit Polygons</p> <p> Soil Map Unit Lines</p> <p> Soil Map Unit Points</p> <p><b>Special Point Features</b></p> <p> Blowout</p> <p> Borrow Pit</p> <p> Clay Spot</p> <p> Closed Depression</p> <p> Gravel Pit</p> <p> Gravelly Spot</p> <p> Landfill</p> <p> Lava Flow</p> <p> Marsh or swamp</p> <p> Mine or Quarry</p> <p> Miscellaneous Water</p> <p> Perennial Water</p> <p> Rock Outcrop</p> <p> Saline Spot</p> <p> Sandy Spot</p> <p> Severely Eroded Spot</p> <p> Sinkhole</p> <p> Slide or Slip</p> <p> Sodic Spot</p>	<p> Spoil Area</p> <p> Stony Spot</p> <p> Very Stony Spot</p> <p> Wet Spot</p> <p> Other</p> <p> Special Line Features</p> <p><b>Water Features</b></p> <p> Streams and Canals</p> <p><b>Transportation</b></p> <p> Rails</p> <p> Interstate Highways</p> <p> US Routes</p> <p> Major Roads</p> <p> Local Roads</p> <p><b>Background</b></p> <p> Aerial Photography</p>	<p>The soil surveys that comprise your AOI were mapped at 1:12,000. Please rely on the bar scale on each map sheet for map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: <a href="http://websoilsurvey.nrcs.usda.gov">http://websoilsurvey.nrcs.usda.gov</a> Coordinate System: Web Mercator (EPSG:3857)</p> <p>Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: State of Connecticut Survey Area Data: Version 14, Sep 22, 2015</p> <p>Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.</p> <p>Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

## Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whilman soils, 0 to 8 percent slopes, extremely stony	46.6	14.4%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	2.2	0.7%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	62.2	19.2%
51B	Sutton fine sandy loam, 2 to 8 percent slopes, very stony	17.9	5.5%
60B	Canton and Charlton soils, 3 to 8 percent slopes	18.0	5.6%
60C	Canton and Charlton soils, 8 to 15 percent slopes	4.1	1.3%
61B	Canton and Charlton soils, 3 to 8 percent slopes, very stony	58.0	17.9%
61C	Canton and Charlton soils, 8 to 15 percent slopes, very stony	25.2	7.8%
62C	Canton and Charlton soils, 3 to 15 percent slopes, extremely stony	7.3	2.2%
62D	Canton and Charlton soils, 15 to 35 percent slopes, extremely stony	28.2	8.7%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	24.0	7.4%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	10.5	3.2%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	5.3	1.7%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	0.9	0.3%
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	9.2	2.9%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	0.1	0.0%
302	Dumps	2.1	0.7%
W	Water	1.8	0.5%
<b>Totals for Area of Interest</b>		<b>323.5</b>	<b>100.0%</b>

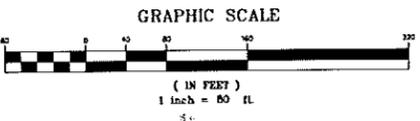




**LEGEND**



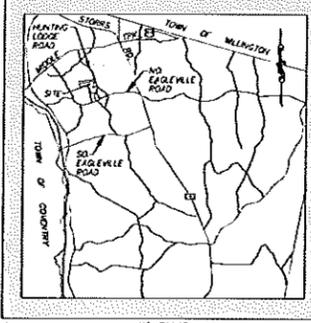
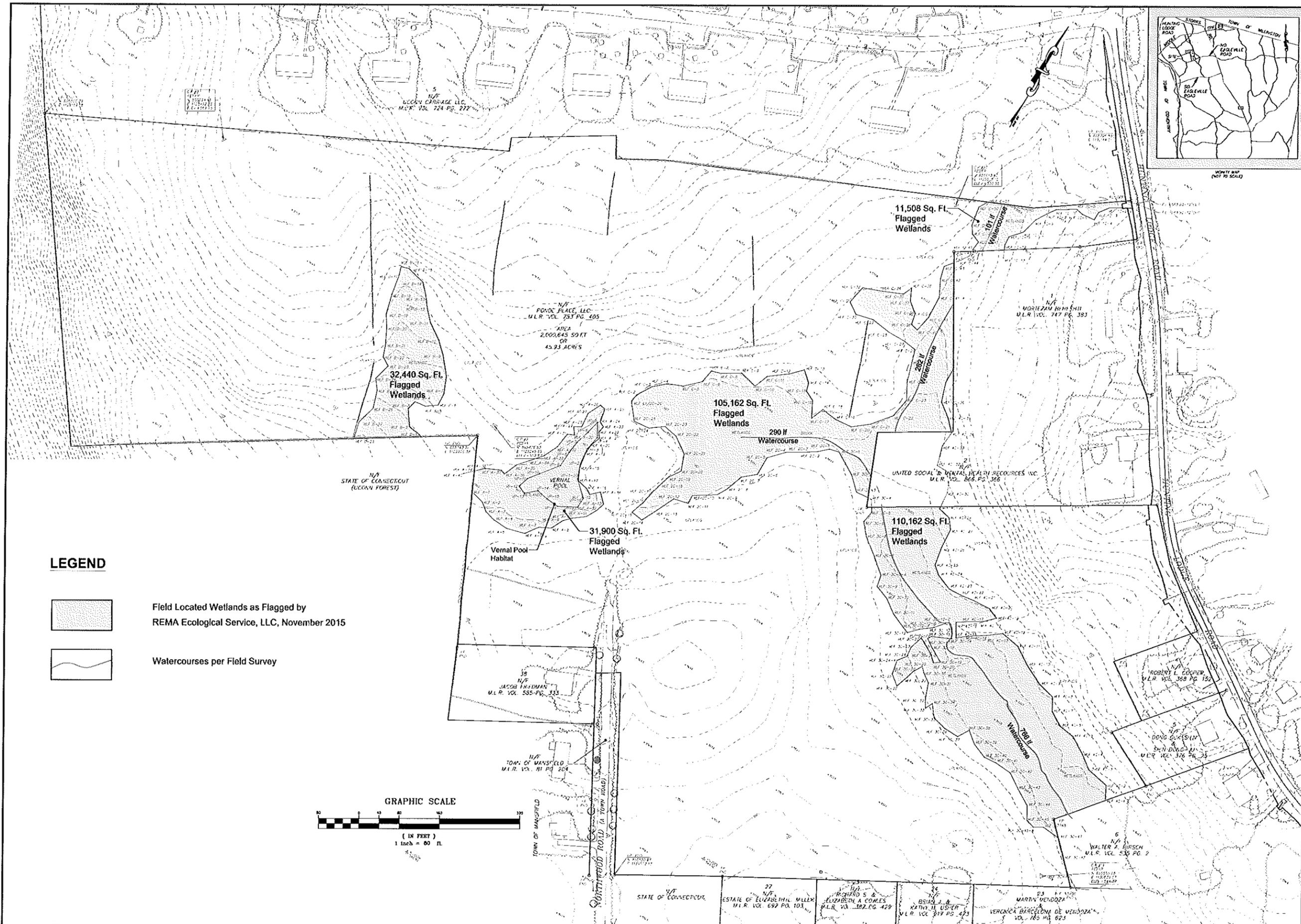
Wetlands as digitized from map entitled, "Wetlands/Watercourses/Waterbodies", Plan of Conservation and Development, April 2006



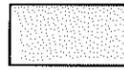
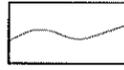
Digitized Wetlands Boundary from Current Town Map

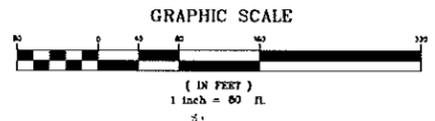
Wetland Area  
666,232 Sq. Ft.  
or 15.29 Acres

<p><b>Current Town Wetlands</b></p>	<p>CURRENT TOWN WETLANDS PROPERTY OF <b>PONDE PLACE, LLC.</b> HUNTING LODGE ROAD MANSHFIELD, STATE</p>	<p>Revisions: No. Date Description</p>
	<p>Date: 11-30-2015 Drawn by: KLL Job no: 04161 Scale: 1" = 80' Checked by: TSH Sheet no: 1 OF 1 © 2004 (4/10) Survey/Wetland Areas Plan/Map, Town Wetlands, Nov. 30, 2015 - 10:09:49 AM</p>	<p>Phone (860) 655-8000 Fax (860) 644-9800 e-mail: info@fahearth.com</p>
<p><b>FAH</b> F. A. Hesketh &amp; Associates, Inc. 6 Creamery Brook, East Granby, CT 06028 Civil &amp; Traffic Engineers • Surveyors • Planners • Landscape Architects</p>		



**LEGEND**

-  Field Located Wetlands as Flagged by REMA Ecological Service, LLC, November 2015
-  Watercourses per Field Survey



No.	Date	Revisions Description

FIELD LOCATED WETLANDS  
 PROPERTY OF  
**PONDE PLACE, LLC.**  
 HUNTING LODGE ROAD  
 MANFIELD, CT 06255

Date: 11-30-2015 Drawn by: KLL Job no: 04161  
 Scale: 1" = 60' Checked by: ZSH Sheet no: 1 OF 1  
 © 2008-2015 Survey/Wetland Area Planning, 1416 Located Wetlands, Nov. 30, 2015 = 8:51:17 AM

**Field Located Wetlands**

# Thomas W. Pietras, Soil Scientist and Wetland Scientist

Pietras Environmental Group, LLC  
15 Briarwood Lane, Wallingford, CT 06492  
Phone: 203-314-6636

Email: [tom@pietrasenvironmentalgroup.com](mailto:tom@pietrasenvironmentalgroup.com)  
Website: [pietrasenvironmentalgroup.com](http://pietrasenvironmentalgroup.com)

## Professional Experience and List of Services

- \*Thirty four years of professional experience as soil and wetland scientist.
- \*Conduct investigations for wetland identification and wetland boundary delineation according to criteria established for CT Inland Wetlands, CT Tidal Wetlands, Federal Wetlands and MASS Bordering Vegetated Wetlands. Completed over 4000 wetland mapping projects in Southern England, New York, New Jersey and Pennsylvania. Worked to revise Town Wetland Maps for Bloomfield, East Hartford, Fairfield, Middletown, Simsbury and Westport.
- \*Preparation of environmental assessment reports. Reports include: description and mapping of vegetative communities and wildlife habitats, prepare plant inventories, assess functional values of wetlands and watercourses and evaluate potential impacts to natural resources from proposed development.
- \*Identification and certification of vernal pools. Conduct investigations to inventory vernal pool species and prepare descriptive reports of vernal pools.
- \*Provide recommendations and assist with plans for creation, restoration and enhancement of wetlands and watercourses.
- \*Prepare planting plans that incorporate native species.
- \*Provide assistance to municipal wetland commissions. Tasks include verification of wetland boundaries, evaluation of potential impacts to wetlands and watercourses from proposed development plans and provide expert testimony at public hearings.
- \*Serve as environmental monitor for construction projects and utility line maintenance projects. Tasks include inspecting sedimentation controls, assessing construction related impacts to wetlands and watercourses, preparing plans for removal of sediments from wetlands and re-establishing native vegetation in impacted areas.
- \*Soil evaluator to engineering firms and health districts. Provide detailed soil descriptions in test pits for design of on-site sewage disposal systems. Experienced in evaluating problem soils, including soils developed in red parent materials.

## Work History

- Two years as a forestry education officer with the Peace Corps in Ghana, West Africa, 1975 to 1977.
- One year in North Carolina working in land survey and forester with a consulting firm in Laurinburg, North Carolina, 1977 to 1978.
- Thirty-two years as a soil scientist and wetland scientist with Soil Science and Environmental Services, Inc. in Cheshire, CT, 1981 to 2013.
- Two years as the principal and professional soil and wetland scientist with Pietras Environmental Group, LLC, 2013 to present.

## Thomas W. Pietras, Professional Soil and Wetland Scientist

### Education

M.S., Natural Resources Conservation, University of Connecticut.  
B.S., Forestry Resources Management, University of West Virginia.  
Post-graduate classes in soil engineering, on-site sewage disposal, soil genesis and classification and plant identification.

### Memberships and Registration

Professional Soil Scientist, Society of Soil Scientists of Southern England.  
Professional Wetland Scientist, Certification Number 1053, Society of Wetland Scientists.  
Membership in Connecticut Association of Wetland Scientists.  
Commissioner on the Town of Wallingford, Conservation Commission.

### Recent Projects:

Completed wetland delineations along utility lines. Conducted wetland delineation on over 200 miles of electrical transmission lines owned by Eversource (formerly Northeast Utilities). Performed wetland delineations along sections of the Northeast Energy Direct project (NED) in Pennsylvania, Massachusetts and Connecticut. NED is a gas pipeline project that will transfer natural gas from the Marsala shale region of PA to New England.

Tidal and Inland Wetland mapping on a 20 acre island in Darien, CT. Work included compiling a vegetative inventory of vegetation growing on the island, making vegetative community maps and documenting the site with photographs.

Primary soil scientist involved for revisions to Town Wetland Maps for Bloomfield, CT and East Hartford, CT. All of the wetlands and watercourses in each town were field identified and their boundaries were field sketched onto MDC maps (200 scale, 2 ft. contours). The field sketches were drafted onto formal maps that were adopted as the official Town Wetland Maps.

Wetland boundary map verifications for Towns of Darien, New Canaan, Westport, Fairfield, Oxford and Wallingford. Served as town expert soil scientist to review wetland delineations submitted by applicants. Whenever accuracy of a wetland delineation is questioned, a joint field inspection was conducted with the applicant soil scientist to determine correct location of the wetland boundary.

Field investigation of vernal pools on properties proposed for development, along utility line right-of-ways and on town open space lands. Projects included residential subdivisions in Avon and Bloomfield, MDC sanitary sewer lines in central CT and on Town of Wallingford open space lands.

Pond restoration in Westport, CT. Completed several months of studying existing conditions in a small pond that had become silted-in. Assisted in the design for removing sediments and deepening the pond and in obtaining necessary regulatory permits. The restored pond provides improved aquatic and wildlife habitat and is used as an outdoor classroom by a nature center.

**Thomas W. Pietras, Professional Wetland and Soil Scientist**

**Recent Projects  
(continued)**

Completed environmental assessment reports for residential, commercial and industrial projects. These include a four-lot residential subdivision on five acres in Avon, CT; a proposed auto park on an 11 acre parcel in the City of Danbury, CT; and a proposed 16 acre distribution center on a 37 acre parcel in South Windsor, CT. Assisted with wetland mitigations plans on the each of the proposed development sites. One project included a proposed 0.6 acre wetland creation site.

Expert technical assistance provided to Towns of Brookfield, Oxford and Westport. Reviewed variety of projects including single family residential subdivisions, 125 unit condominium development, 124 affordable mobile home community on 40 acres, 200 unit multi-family residential community on a four acre parcel on Route One and plans for a 150,000 sq. ft. shopping plaza. Site plans submitted by the applicant were evaluated for potential impacts to wetlands and watercourses.

Served as environmental monitor for sanitary sewer line project in Berlin, CT and for vegetative maintenance along a 41 mile natural gas line in CT. Activities included inspecting for impacts to wetlands and watercourses, ensuring that appropriate environmental procedures were followed and re-locating state listed turtles that were present within an active work area.

Evaluated topsoil and turf in playing fields on two schools and a town park for Town of Wallingford. Soil descriptions provided for both topsoil and subsoil horizons . Provided recommendations to correct drainage problems in the fields.

Served with other soil scientist on committees formed to address wetland identification in problem soils. Separate studies and workshops were held for soils on floodplains, soils developed in reddish-colored glacial till and soils on disturbed landscapes. Assisted in conducting field studies in the problem soils, compiling narrative reports and running field workshops.

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## PIETRAS ENVIRONMENTAL GROUP, LLC

### PROPOSAL FOR SERVICES

Date: December 2, 2015

To:

Jennifer Kaufman, Natural Resources and Sustainability Coordinator &  
Inland Wetlands Agent  
Town of Mansfield  
10 South Eagleville Road  
Storrs-Mansfield, CT 06268

Project Name & Location:

Property of Ponde Place LLC, Hunting Lodge Road, Mansfield, CT (45+/- acres)

Services

Pietras Environmental Group, LLC will provide the following services:

I. Wetland boundary verification.

The property will be inspected for the purpose of verifying the wetland boundary lines which were previously established by Rema Ecological Services, LLC (RES) in October 2015. All of the wetland boundary lines previously established by RES will be inspected. Test holes will be dug with a spade and auger in order to verify the accuracy of the flagged wetland boundaries. For any area where the wetlands boundary line(s) is determined to be different from what was previously identified by RES, a field sketch will be drawn onto the property map to show the approximate location(s) of the different wetland boundary. Immediately following the site inspection you will be contacted and informed of my findings. If differences are found in the proposed wetland boundary, a copy of the field sketch map will be forwarded to you which identifies the area(s) of difference.

The site investigation will include an examination of the entire site. Special attention will be paid to inspecting those areas which are presently shown as wetlands on the Town of Mansfield Wetlands Map, but were not identified as wetlands by RES.

II. Joint site investigation to resolve differences in the wetland boundary line(s).

Depending on whether I determine the wetland boundary line(s) are different from the wetland boundary line delineated by RES or if additional wetlands are identified on the property, it may be prudent to schedule a joint site inspection with staff from Rema Ecological Services and myself. It is highly recommended that a representative from the Town be present as well. Those areas where the accuracy of the delineated wetlands boundary was questioned will be reviewed. An attempt will be made during the joint site inspection to the Applicant Soil Scientist (Rema Ecological Services) and the third party reviewer Soil Scientist (Pietras Environmental Group) agree on the actual location of wetland boundary and revise the wetland delineation if necessary in all of the questioned areas.

III. Prepare report of findings.

A report will be prepared that presents the findings of the wetland boundary verification investigation and if applicable the results of the joint site investigation.

IV. Representation at meetings.

Representation will provided at staff meetings and Inland Wetland Agency meetings as requested by the Town.

---

15 Briarwood Lane  
Wallingford, CT 06492  
203-314-6636

EMAIL [Tom@pietrasenvironmentalgroup.com](mailto:Tom@pietrasenvironmentalgroup.com)  
WEB SITE [pietrasenvironmentalgroup.com](http://pietrasenvironmentalgroup.com)

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**Proposal for Wetland Boundary Verification, Property of Ponde Place LLC, Hunting Lodge Road,  
Mansfield, CT (45+/- acres)**

page 2 of 2

Cost for Services

The costs for providing Tasks I thru IV are:

Tasks I and III. Conduct Investigation to verify proposed wetland boundary lines & provide report of findings.

\$800.00

Task II. If necessary, attend joint site investigation for purpose of resolving any questioned wetland boundary line(s). This task is optional and would only occur if differences are determined with the proposed wetland boundary line(s) and if the Town decides a joint site investigation is necessary.

The cost to perform Task II would be billed at the hourly rate of \$80.00 per hour, with a minimum fee of \$250.00. It is unlikely that this task would require more than a full day.

Task IV. Representation at staff meetings and Inland Wetlands Agency meetings.

Representation at meetings is billed at the hourly rate of \$80.00 per hour with a minimum fee of \$250.00.

Respectfully submitted,

Pietras Environmental Group, LLC



Thomas W. Pietras  
Professional Wetland and Soil Scientist

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**PIETRAS ENVIRONMENTAL GROUP, LLC**  
**WETLANDS INVESTIGATION REPORT**

, 2015

Conservation Department  
ATTN: Alicia Mozian, Director  
Town Hall, 110 Myrtle Avenue  
Westport, CT 06880

Re: Property Address

Dear Ms. Mozian:

In accordance with your request, I conducted a site inspection to the subject property on S, 2015. The purpose of the investigation was to verify the proposed wetland boundaries that were previously established by M. Wetland and Soil Scientist. A wetlands delineation report, dated, 2015, was prepared by M. According to the report, M. conducted site inspections to the subject property on , 2014 and, 2015. M. identified two areas of wetlands: one wetland lies to the east of A Road and the second wetland is situated to the west of the road. The wetland boundaries were delineated by M. with consecutively numbered, survey tapes (1 thru ). The wetland boundaries were plotted onto a property plan map prepared by W - Land Surveyor, LLC, dated , 2015.

During the S, 2015 inspection I found most of the wetland boundary flags that had been previously established by M. I was not able to find wetland flags 1, 4, 15, 40 thru 43, 49, 50 and 51. However, I was able to determine the approximate locations for these missing flags in the field based on the information provided on the survey map. The survey map clearly shows the locations of all of the wetland boundary flags along with stone walls and individual trees. On S, 2015 I dug test holes with a spade and auger for soils identification. Site conditions on /2015 included: mostly sunny, seasonably cool in the 40's and moist to dry soils. During the past several weeks rainfall was scarce and temperatures were very warm. However, there was sufficient soil moisture to identify soil types.

Based on my S, 2015 investigation I am in agreement with the wetland boundaries that were previously delineated by M. with one exception. I determined that additional wetlands are present to the southeast of wetland flags t to x. I identified poorly drained L fine sandy loam extending 20 to 30 feet to the southeast of the wetland boundary flags t to x.

---

15 Briarwood Lane  
Wallingford, CT 06492  
203-314-6636

EMAIL [Tom@pietrasenvironmentalgroup.com](mailto:Tom@pietrasenvironmentalgroup.com)  
WEB SITE [pietrasenvironmentalgroup.com](http://pietrasenvironmentalgroup.com)

A joint site inspection was conducted on O, 2015. Those present at the inspection were: Alicia Mozian, Director for Westport Conservation Department, M. and Thomas Pietras. Site conditions on O, 2015 included: sunny, temperatures in the 40's and soil moisture ranging from dry to moist. Soils in the test holes were carefully examined. Based on the O, 2015 investigation it was jointly agreed by both M. and Mr. Pietras to revise the wetlands boundary that was previously delineated by Wetland Flag numbers t thru x. New wetland boundary flags, numbered t-R thru x-R, were established to delineate the additional wetlands. This resulted in slightly increasing the extent of mapped wetlands (refer to sketch map in Figure 1).

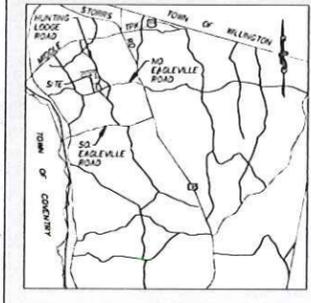
In summary and conclusion, I inspected the property on S, 2015 for the purpose of wetland boundary verification. The wetland boundary lines previously established by M. were determined to be substantially correct with one exception. I determined that additional wetlands lie to the southeast of Wetland Flags t thru x. A joint site investigation was conducted on O, 2015. The wetland boundary in question was reviewed by M. and Mr. Pietras. It was mutually agreed that there are additional wetlands present up slope of wetland boundary flags t thru x. A revised wetland boundary line was established on O, 2015 with wetland boundary flags t-R thru x-R in order to include the additional wetlands.

Respectfully submitted,



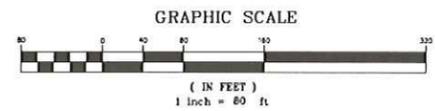
Thomas W. Pietras, Professional Wetland and Soil Scientist

cc: M.



**LEGEND**

- FUTURE DEVELOPMENT AREA FOR LODGES AND FLATS POST WETLAND LINE DELINEATION
- PRIMARY ACCESS TO FUTURE DEVELOPMENT AREAS



No.	Date	Revisions/Description

CONCEPTUAL SITE DEVELOPMENT PLAN  
 PROPERTY OF  
**STORRS LODGES LLC**  
 HUNTING LODGE ROAD  
 MANSFIELD, STATE

Date: 12-01-2013 Drawn by: KLL Job no: 04191  
 Scale: 1" = 80' Checked by: DSZ Sheet no: 1 OF 1

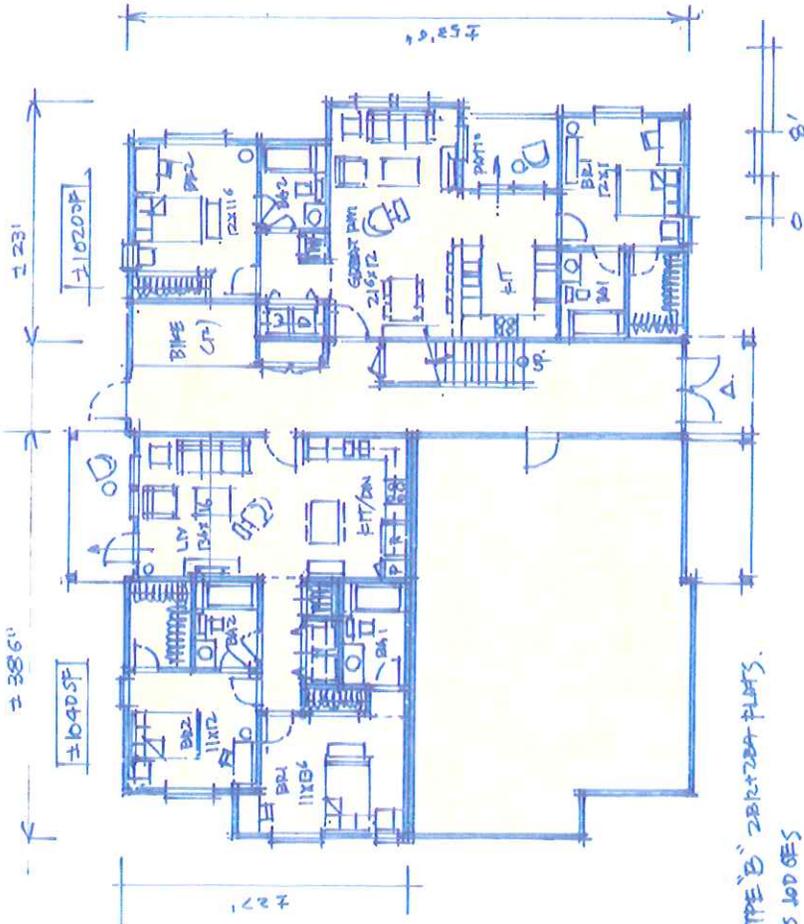
**CS-1**

**FAH** F. A. Hesketh & Associates, Inc.  
 6 Creamery Brook, East Granby, CT 06026  
 Cell & Traffic Engineers • Surveyors • Planners • Landscape Architects

Phone (860) 653-8000  
 Fax (860) 644-8000  
 e-mail: fah@fahinc.com

© 2004-2013 F.A.H. - January 2016 - January 2016 Conceptual Site Development, Dec. 03, 2015 - 10:09:02 AM

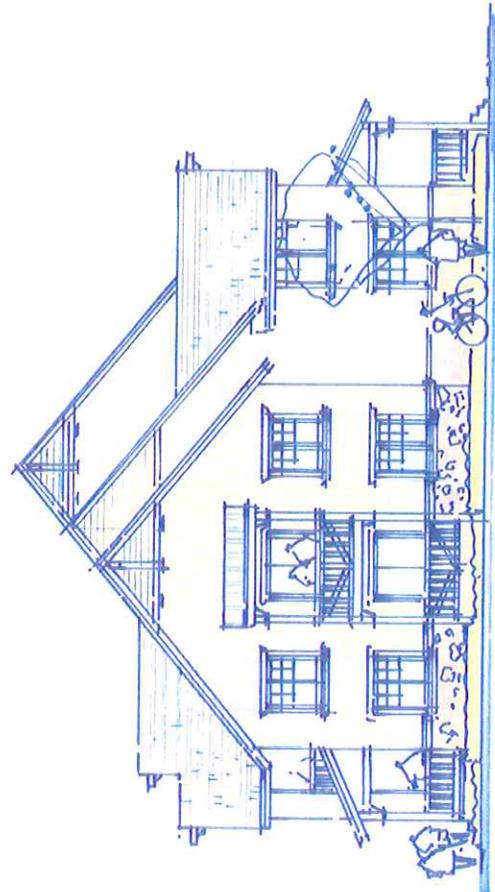




BLDG TYPE 'B' 2BDR/2BATH PLATS.  
STORIES LODGES



FRONT  
CHARACTER ELEVATIONS  
BLDG TYPE 'B' © STORIES LODGES



RIGHT

Plot group  
11/13/2015



# Department of Planning and Development

**Date:** December 2, 2015  
**To:** Mansfield Inland Wetlands Agency  
**From:** Jennifer Kaufman, Inland Wetlands Agent  
**Subject:** Receipt of New Application for Wetlands License  
895 Mansfield City Road (IWA File #1560)  
M. Slowik  
Description of work: single family dwelling

---

## Project Description

The applicant proposes to construct a single family dwelling on the southwesterly side of Mansfield City Road. The majority of the activity is proposed within the upland review area. The closest activity to wetlands is the proposed driveway, which is located on 20 feet from the edge of wetlands.

- The project includes work in wetlands.
- The project includes work in the 150 foot upland review area.
- The project is located in a Public Water Supply Watershed.

## Application Fees and Notifications

- The applicant has paid the required application fee
- The applicant has submitted copies of the notice mailed to neighbors and a list of abutters to be notified. Certified mail receipts must be submitted prior to action on the application.
- Natural Diversity Database has been checked and state and/or federal listed species or significant natural communities have not been identified on the property.

## Receipt Motion

\_\_\_\_\_ MOVES, \_\_\_\_\_ seconds to receive the application submitted by M. Slowik (IWA File #1560) under the Wetlands and Watercourses Regulations of the Town of Mansfield for single family dwelling on property located at 895 Mansfield City Road as shown on a map dated 10/23/2015 and as described in application submissions, and to refer said application to staff and the Conservation Commission for review and comments.



**APPLICATION PACKET**  
**MANSFIELD INLAND WETLANDS AGENCY**  
**4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268**  
**TEL: 860-429-3334**  
**OR 429-3330;**  
**FAX: 860-429-6863**

Please use this checklist as an aid in making sure that you have completed the forms correctly. The Agency requires that each item in the application form be filled out. Failure to do so may result in application denial and the need for you to resubmit your application and pay an additional fee.

- X   Consultation with Wetlands Agent
- X   Amount of fee paid \$125+\$60 = \$185
- X   Dated map/site plan
- X   Project description
- X   Names and addresses of abutters
- X   Certified postal receipts to abutters
- N/A   Certified postal receipts to Windham Water Works (if applicable)
- N/A   Proof of submittal to Department of Public Health (if applicable)
- N/A   Certified postal receipts to adjoining town  
(if less than 500' from town line)
- X   Statewide Reporting Form
- X   CT DEEP Natural Diversity Database Checked  
See attached map-no activity in sensitive area

Your application goes to Agency members on the Friday before a meeting as part of a large packet of information. It is suggested that you submit your application a full week ahead of the meeting to allow for a preliminary review by staff. The more information you can provide to help the Agency understand your proposal, the easier it will be for them to act on your application.

APPLICATION FOR PERMIT  
MANSFIELD INLAND WETLANDS AGENCY  
4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268  
TEL: 860-429-3330 OR 860-429-3015x6204  
FAX: 860-429-6863

FOR OFFICE USE ONLY  
File # \_\_\_\_\_  
W \_\_\_\_\_  
Fee Paid \_\_\_\_\_  
Official Date of Receipt \_\_\_\_\_

*Applicants are referred to the Mansfield Inland Wetlands and Watercourses Regulations for complete requirements, and are obligated to follow them. For assistance, please contact the Inland Wetlands Agent at the telephone numbers above.*

Please print or type or use similar format for computer; attach additional pages as necessary.

**Part A - Applicant**

Name Michael Slowik  
Mailing Address 895 Mansfield City Road  
Storrs, CT Zip 06268  
Phone 860-933-2748 Email mike@thecabinetworksllc.com

**Title and Brief Description of Project**

Split an existing lot of record for a proposed single family dwelling

Location of Project 895 Mansfield City Road  
Intended Start Date Spring 2016

**Part B - Property Owner (If applicant is the owner, just write "same")**

Name same as applicant  
Mailing Address \_\_\_\_\_  
\_\_\_\_\_ Zip \_\_\_\_\_  
Phone \_\_\_\_\_ Email \_\_\_\_\_

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature \_\_\_\_\_ date \_\_\_\_\_

Applicant's interest in the land: (if other than owner) \_\_\_\_\_

**Part C - Project Description (attach extra pages, if necessary)**

- 1) Describe in detail the proposed activity here or on an attached page. (See guidelines at end of application – page 6.)

Please include a description of all activity or construction or disturbance:

- a) in the wetland/watercourse  
b) in the area *adjacent* to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is *off* your property  
a) No proposed activity in wetlands

b) Proposed Driveway-approximately 20' from wetlands at its closest point

Proposed Well-approximately 70' from wetlands at its closest point

Proposed House-approximately 100' from wetlands at its closest point

Proposed Septic System-approximately 140' from wetlands at its closest point

Proposed Foundation Drain Outlet-approximately 137' from wetlands

- 2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

- a) in the wetland/watercourse  
b) in the area *adjacent* to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is *off* your property  
a) No wetlands to be disturbed

b) 26,000 sq. ft. (0.6 ac.)

- 3) Describe the type of materials you are using for the project:

Fill for driveway and septic system will be sand & gravel material.

- a) include *type* of material used as fill or to be excavated sand & gravel  
b) include *volume* of material to be filled or excavated Approximately 200 cu. yds. for driveway and approximately 80 cu. yds. for septic system.

- 4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).

Silt fencing will be placed as shown on submitted plans down gradient of proposed disturbances and will be maintained until site disturbances are stabilized.

**Part D - Site Description**

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)

Gently sloping wooded area with well drained soils.

**Part E - Alternatives**

Have you considered any alternatives to your proposal that would meet your needs and might have less impact on the wetland/watercourse? Please list these alternatives.

The proposed plan minimizes the impact to wetlands on this proposed lot.

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**Part F - Map/Site Plan (all applications)**

1) Attach to the application a map or site plan showing existing conditions and the proposed project in relation to wetland/ watercourses. Scale of map or site plan should be 1" = 40'; if this is not possible, please indicate the scale that you are using. A sketch map may be sufficient for small, minor projects. (See guidelines at end of application – page 6.)

2) Applicant's map date and date of last revision October 23, 2015

3) Zone Classification RAR-90

4) Is your property in a flood zone?  Yes  No  Don't Know

**Part G - Major Applications Requiring Full Review and a Public Hearing**

See Section 6 of the Mansfield Regulations for additional requirements.

**Part H - Notice to Abutting Property Owners**

1) Attach list of abutters, name, address

2) **Proof of Written Notice to Abutters.** You must notify abutting (neighboring) property owners (any property immediately contiguous with the subject property, including those across the street) by certified mail, return receipt requested, stating that a wetland application is in progress, and that abutters may contact the Mansfield Inland Wetlands Agent for more information. Include a brief description of your project. Postal receipts of your notice to abutters must accompany your application. (This is not needed for exemptions).

**Part I - Additional Notices, If necessary**

Notice to Windham Water Works and CT Department of Public Health is attached. If this application is in the public watershed for the Windham Water Works (WWW), you must notify the WWW and the Department of Public Health of your project within 7 days of sending the application to Mansfield--sending it by certified mail, return receipt requested. Contact the Mansfield Inland Wetlands Agent to find out if you are in this watershed.

Notice to Adjoining Town. If your property is within 500 feet of an adjoining town, you must also send a copy of the application, on the same day you sent one to Mansfield, to the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.

The Statewide Reporting Form (attached) shall be part of the application and specified parts must be completed and returned with this application.

**Part J - Other Impacts To Adjoining Towns, if applicable**

- 1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site? \_\_\_ Yes X No \_\_\_ Don't Know
  
- 2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality? \_\_\_ Yes X No \_\_\_ Don't Know
  
- 3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality? \_\_\_ Yes X No \_\_\_ Don't Know

**Part K - Additional Information from the Applicant**

Set forth (or attach) any other information which would assist the Agency in evaluating your application. *(Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)*

**Part L - Filing Fee**

Submit the appropriate filing fee. (Consult Wetlands Agent for the fee schedule available in the Mansfield Inland Wetlands and Watercourses Regulations.)

\_\_\_ \$1,000. \_\_\_ \$750. \_\_\_ \$500. \_\_\_ \$250. X \$125. \_\_\_ \$100. \_\_\_ \$50. \_\_\_ \$25.

X \$60 State DEP Fee = \$185.

*Note: The Agency may require you to provide additional information about the regulated area which is the subject of the application, or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.*

**Certification**

I hereby certify that:

- I am familiar with the information contained in this form and that such information is true and correct to the best of my knowledge.
- I understand the penalties for obtaining a permit through deception or through inaccurate or misleading information.

Ma / WSLT  
Signature

12-1-15  
Date

**Authorization to Enter Property**

The undersigned hereby consent to necessary and proper inspections of the above-mentioned property by members and agents of the Inland Wetlands Agency at reasonable times, both before and after the permit in question has been issued by the Agency.

Ma / WSLT  
Signature

12-1-15  
Date

**Project Description Guidelines for Part C – page 3**

1. Explain exactly what work you propose to do and how close it will be to a wetland or watercourse.
2. Describe area of disturbance and volume and type of material to be filled or excavated. How much wetlands will be disturbed? Non-wetland areas nearby?
3. Does the area of activity drain toward the wetland?
4. Are there alternatives that you considered but eliminated for specific reasons?
5. Describe briefly the construction methods. What kind of heavy equipment will be used? When will the work be done?
6. How are you protecting the wetlands and watercourses against disturbance that will result from construction?
7. Do you have any knowledge of a previous wetlands application for this property? If yes, please explain.

**Sketch Map or Site Plan Guidelines for Part F – page 4**

**The following 10 details are required for every application:**

1. Applicant's name
2. Date and revision date, if applicable.
3. North arrow and scale of map.
4. Abutting road with road name shown on it.
5. Property lines --if a large property, at least those lines within 200' of the proposed work.
6. Wetland and watercourse locations (including those off your property) within 150' of your proposal--draw a line showing the part of the project that is the closest distance to wetlands and indicate distance in feet.
7. Existing buildings, driveways, well, septic and physical features.
8. Proposed work in detail, including all areas of construction, grading/regrading, excavation, filling. Include stockpiling and staging area locations if applicable. The exact location must be shown of all areas that will be disturbed.
9. Show roof and footing drains by drawing locations.
10. Show location of Erosion & Sedimentation controls (silt fence or hay bale protections) together with any other measures that will protect the wetland/watercourse areas.

Include any available information that may assist the Agency in understanding your proposal.

**YOUR PERMIT, WHEN GRANTED, IS VALID FOR 6 YEARS; ONCE STARTED, WORK MUST BE FINISHED WITHIN THE SPECIFIC TIME PERIOD AS SPECIFIED IN THE APPROVAL MOTION UNLESS OTHERWISE APPROVED. SPECIFIC WRITTEN REQUESTS MUST BE MADE FOR EXTENSIONS OR RENEWALS (See Section 7.9) rev. 12/21/98**



## Statewide Inland Wetlands & Watercourses Activity Reporting Form

*Please complete - print clearly - and mail this form in accordance with the instructions on pages 2 and 3 to:  
Wetlands Management Section, Inland Water Resources Division, CT DEEP, 79 Elm Street - 3<sup>rd</sup> Floor, Hartford, CT 06106*

### PART I: To Be Completed By the Municipal Inland Wetlands Agency Only

- DATE ACTION WAS TAKEN (enter one year and month): Year \_\_\_\_\_ Month \_\_\_\_\_
- ACTION TAKEN (enter one code letter): \_\_\_\_\_
- WAS A PUBLIC HEARING HELD (check one)? Yes \_\_\_\_\_ No \_\_\_\_\_
- NAME OF AGENCY OFFICIAL VERIFYING AND COMPLETING THIS FORM:  
(type name) \_\_\_\_\_ (signature) \_\_\_\_\_

### PART II: To Be Completed By the Municipal Inland Wetlands Agency or the Applicant

- TOWN IN WHICH THE ACTION IS OCCURRING (type name): Mansfield  
Does this project cross municipal boundaries (check one)? Yes \_\_\_\_\_ No X  
If Yes, list the other town(s) in which the action is occurring (type name(s)): \_\_\_\_\_
- LOCATION (see directions for website information): USGS Quad Map Name: Coventry or Quad Number: 40  
Subregional Drainage Basin Number: 3100
- NAME OF APPLICANT, VIOLATOR OR PETITIONER (type name): Michael Slowik
- NAME & ADDRESS/LOCATION OF PROJECT SITE (type information): 895 Mansfield City Road, Storrs, CT 06268  
Briefly describe the action/project/activity (check and type information): Temporary \_\_\_\_\_ Permanent X  
Description: Lot split for a proposed single family dwelling.
- ACTIVITY PURPOSE CODE (enter one code letter): B
- ACTIVITY TYPE CODE(S) (enter up to four code numbers): 12, 14, \_\_\_\_\_, \_\_\_\_\_
- WETLAND / WATERCOURSE AREA ALTERED (type in acres or linear feet as indicated):  
Wetlands: 0 acres      Open Water Body: 0 acres      Stream: 0 linear feet
- UPLAND AREA ALTERED (type in acres as indicated): 0.75 acres
- AREA OF WETLANDS / WATERCOURSES RESTORED, ENHANCED OR CREATED (type in acres as indicated): 0 acres

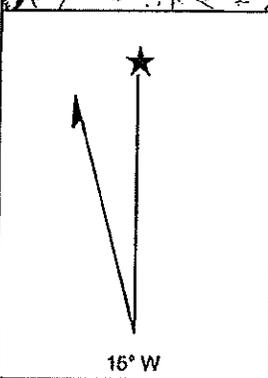
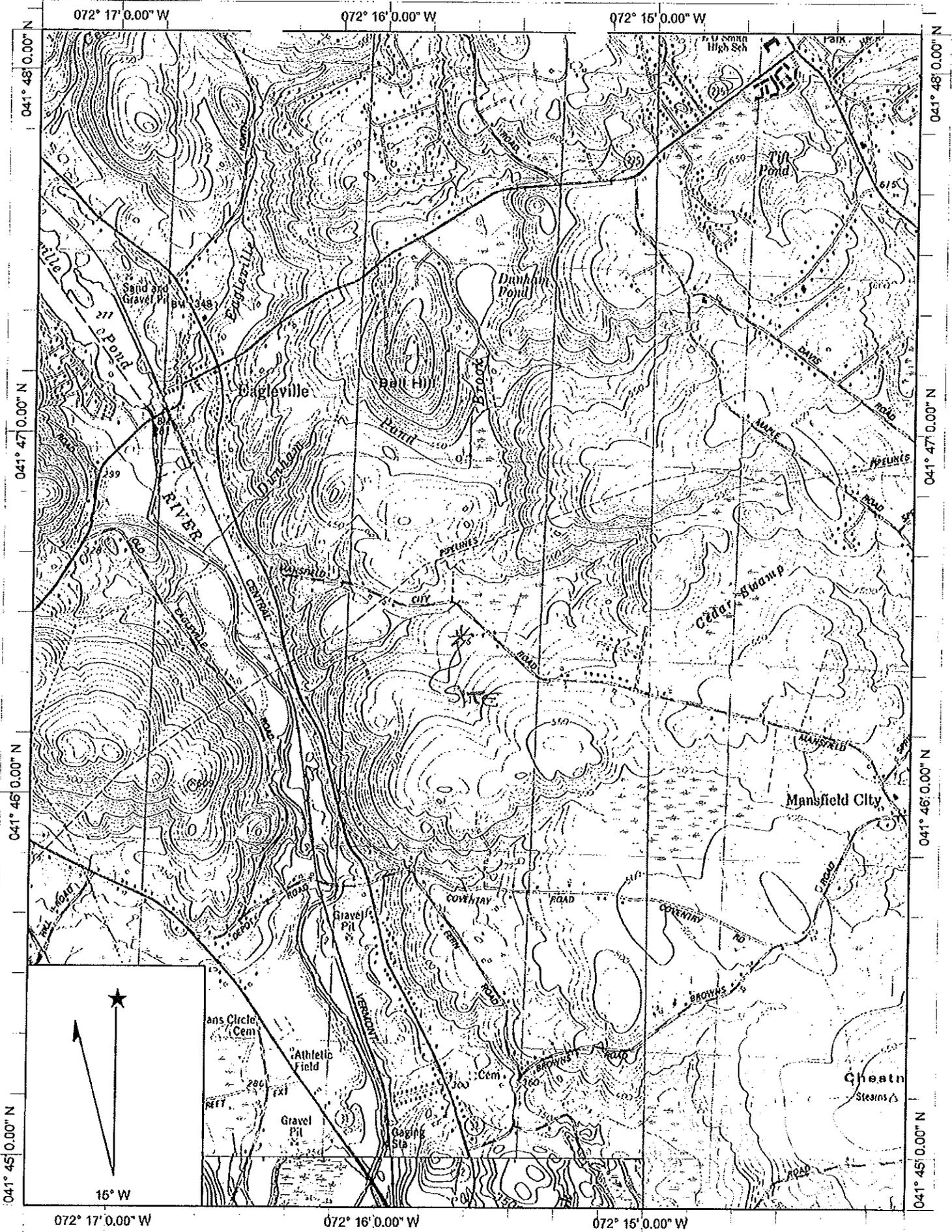
DATE RECEIVED:

PART III: To Be Completed By the DEEP

DATE RETURNED TO DEEP:

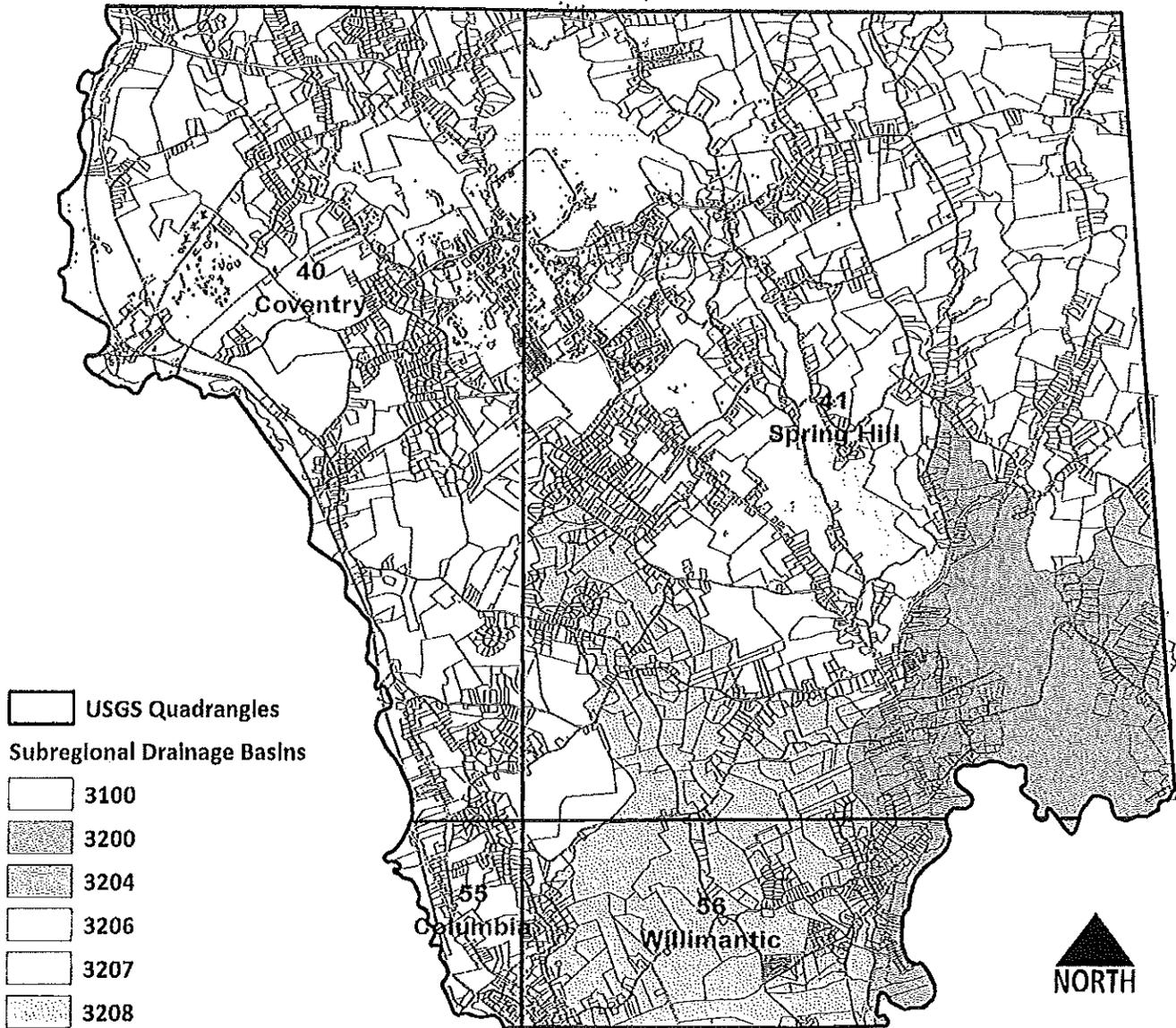
FORM COMPLETED: YES NO

FORM CORRECTED / COMPLETED: YES NO



Mansfield, Connecticut

# USGS QUADRANGLES and SUB-REGIONAL DRAINAGE BASINS



Prepared by Mansfield Dept. of Planning and Development  
May 23, 2014



# Mansfield, Connecticut

## WILLIMANTIC RESERVOIR PUBLIC WATER SUPPLY WATERSHED



 Mansfield\_Willimantic\_Reservoir\_Watershed-REV2  
Public Water Supply (PWS) ID #CT1630011

Prepared by Mansfield Dept. of Planning and Development  
June 18, 2014



# Natural Diversity Data Base Areas

MANSFIELD, CT

September 2015

 State and Federal Listed Species  
& Significant Natural Communities

 Town Boundary

NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources. Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

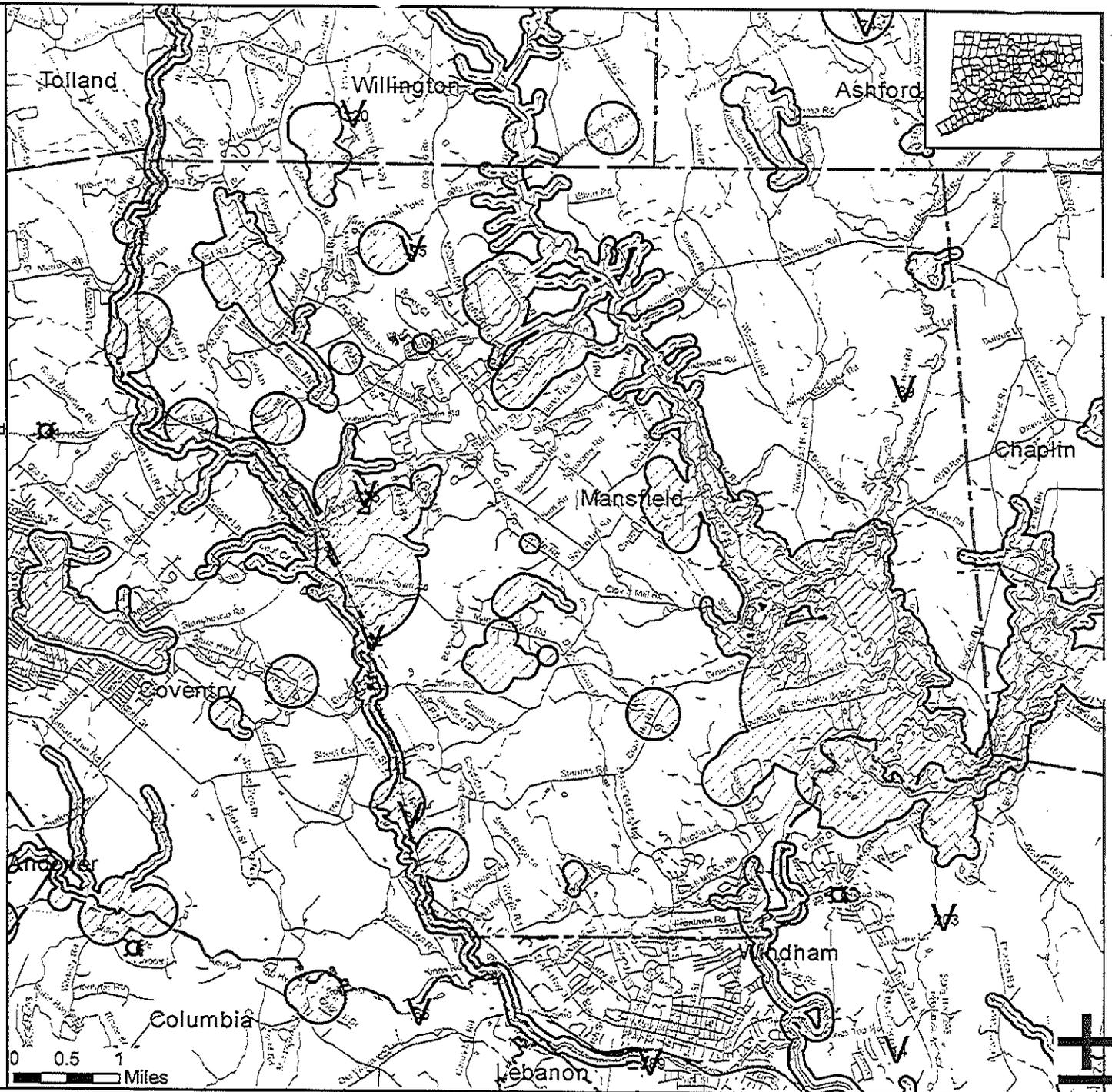
[www.ct.gov/deep/nddbrequest](http://www.ct.gov/deep/nddbrequest)

Use the CTECO Interactive Map Viewers at [www.cteco.uconn.edu](http://www.cteco.uconn.edu) to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)  
79 Elm St., Hartford CT 06106  
Phone (860) 424-3011



Connecticut Department of  
Energy & Environmental Protection  
Bureau of Natural Resources  
Wildlife Division









# Town of Mansfield

## Department of Planning and Development

**Date:** December 2, 2015  
**To:** Mansfield Inland Wetlands Agency  
**From:** Jennifer Kaufman, Inland Wetlands Agent  
**Subject:** Dunham Pond Road (Parcel ID 21.55.14) (File #J-5)  
Frank Costigliola on behalf of the Dunham Pond Association  
Description of work: minor work to control erosion

---

### Notifications

*Request for a ruling-None Required*

### Project Overview/Background

During the winter of 2015, a large tree and root mass was uprooted on the eastern side of Dunham Pond Road at the edge of a stone channel that serves as an outlet to Dunham Pond. The stream channel is now compromised and the stream bank is eroding into the watercourse. The Dunham Pond Association is proposing to grind the root mass and repair the stone channel to prevent further erosion. All debris will be removed from the site. The stone channel will be repaired using the existing stones from the site. No material will be brought onto the site.

The Association is requesting a jurisdictional ruling that this is a permitted as a non-regulated activity pursuant to section 4.0 of the Regulations.

### Recommendation

Because the debris from the grinding of the root mass will be removed from the site and only minor repairs to the channel will be made, it is my opinion that this would be considered "minor work to control erosion" which, pursuant to section 4.0 of the Regulations, is permitted as a non-regulated use in wetlands and watercourses "provided [it does] not disturb the natural and indigenous character of the wetland or watercourse by removal or deposition of material, alteration or obstruction of the water flow or pollution of the wetland or watercourse."

However, I would like a determination from the Agency that you are in agreement with this interpretation.

**Motions for Consideration by the Agency**

***Jurisdictional Ruling***

If the IWA concurs with my conclusion that the proposed the removal of the root mass and repair of the stone channel is a permitted, non-regulated activity under section 4.0 of the Regulations, the following motion for a jurisdictional ruling would be in order:

\_\_\_\_\_ MOVES, \_\_\_\_\_ seconds to approve a Jurisdictional Ruling finding that the removal of a root mass caused by an uprooted tree and repair of the stream channel on land owned by the Dunham Pond Association (IWA File # J-5) as shown on a map dated 12/1/2015 and as described in the associated attachments is permitted as a non-regulated activity pursuant to Section 4.0 of the Inland Watercourses and Wetlands Regulations of the Town of Mansfield.

***Receipt Motion***

Alternatively, if the IWA believes that the removal of a root mass caused by an uprooted tree and repair of the stream channel is a regulated activity, the following motion to receive an Inland Wetlands application would be in order:

\_\_\_\_\_ MOVES, \_\_\_\_\_ seconds to receive the application submitted by Frank Costigliola (IWA File #1561) for removal of a root mass caused by an uprooted tree and repair of the stream channel on land owned by the Dunham Pond Association under the Inland Wetlands and Watercourses Regulations of the Town of Mansfield, as shown on a map dated 12/1/2015 and as described in application submissions, and to refer said application to staff and the Conservation Commission for review and comments.

**APPLICATION FOR PERMIT  
MANSFIELD INLAND WETLANDS AGENCY  
4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268  
860-429-3015x6204 (DIRECT) TEL: 860-429-3330 OR  
FAX: 860-429-6863**

FOR OFFICE USE ONLY

File # W \_\_\_\_\_  
Fee Paid \_\_\_\_\_ Official Date of  
Receipt \_\_\_\_\_

*Applicants are referred to the Mansfield Inland Wetlands and Watercourses Regulations for complete requirements, and are obligated to follow them. For assistance, please contact the Inland Wetlands Agent at the telephone numbers above.*

Please print or type or use similar format for computer; attach additional pages as necessary.

**Part A - Applicant**

Name \_\_\_\_\_ Frank Costigliola

Mailing Address\_\_ 111 Dunham Pond Rd

Storrs CT 06268

Phone 860 477 0854

e-mail: frank.costigliola@uconn.edu

**Title and Brief Description of Project**

\_\_\_\_\_ minor work to control erosion \_\_\_\_\_

Location of Project\_\_ Dunham Pond Rd near junction of Dunham Pond Rd East  
parcel ID 21 5514

Intended Start Date \_\_\_\_\_ December 2015

**Part B - Property Owner (if applicant is the owner, just write "same")**

Name \_\_\_\_\_ Dunham Pond Association

Mailing Address \_\_\_\_\_ same address \_\_\_\_\_

\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature \_\_\_\_\_ date \_\_\_\_\_

Applicant's interest in the land: (if other than owner) \_\_\_applicant is president of Dunham Pond Association

**Part C - Project Description (attach extra pages, if necessary)**

1) Describe in detail the proposed activity here or on an attached page. (See guidelines at end of application)

Please include a description of all activity or construction or disturbance:

- a) **in** the wetland/watercourse
- b) **in** the area **adjacent** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property

\_\_\_\_\_ Cut up fallen tree, grind stump and root mass, and dispose of extra debris, then rebuild stone bank that was knocked down by the partial uprooting of the fallen tree

\_\_\_\_\_ We request a jurisdictional ruling.

2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

- a) **in** the wetland/watercourse
- b) **in** the area **adjacent** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property

\_\_\_\_\_ roughly 15' by 6'

3) Describe the type of materials you are using for the project: \_\_\_the dirt and stone already there \_\_\_\_\_

a) include **type** of material used as fill or to be excavated \_we will use the dirt and ground up roots, etc to restore soil level to its previous condition and remove any excess

b) include **volume** of material to be filled or excavated

4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).

\_\_\_\_\_ silt fence to prevent erosion into stream

**Part D - Site Description**

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)

\_\_\_\_\_ stream bed and immediate adjacent bank \_\_\_\_\_

**Part E - Alternatives**

Have you considered any alternatives to your proposal that would meet your needs and might have less impact on the wetland/watercourse? Please list these alternatives.

\_\_\_\_\_ if we left the fallen tree as is, soil would wash into the stream and the rock wall could fall further into the stream, thereby blocking the natural drainage of Dunham Pond.

**Part F - Map/Site Plan (all applications)**

1) Attach to the application a map or site plan showing **existing conditions** and the **proposed project** in relation to wetland/ watercourses. Scale of map or site plan should be 1" = 40'; if this is not possible, please indicate the scale that you are using. A sketch map may be sufficient for small, minor projects. **(See guidelines at end of application)**

2) Applicant's map date and date of last revision \_\_\_\_\_

3) Zone Classification \_\_\_\_\_

4) Is your property in a flood zone? \_\_\_\_\_ Yes \_\_\_\_\_ No \_\_\_\_\_ Don't Know

**Part G - Major Applications Requiring Full Review and a Public Hearing**

See Section 6 of the Mansfield Regulations for additional requirements.

**Part H - Notice to Abutting Property Owners**

1) Attach list of abutters, name, and address

%L2)**Proof of Written Notice to Abutters.** You must notify abutting (neighboring) property owners (any property immediately contiguous with the subject property, including those across the street) by certified mail, return receipt requested, stating that a wetland application is in progress, and that abutters may contact the Mansfield Inland Wetlands Agent for more information. Include a brief description of your project. ***Postal receipts of your notice to abutters must accompany your application.*** To generate an abutters list go to <http://www.mainstreetmaps.com/CT/Mansfield/>

**Part I - Additional Notices, if necessary**

Notice to Windham Water Works and CT Department of Public Health is attached. If this application is in the public watershed for the Windham Water Works (WWW), you must notify the WWW and the Department of Public Health of your project within 7 days of sending the application to Mansfield--sending it by certified mail, return receipt requested. Contact the Mansfield Inland Wetlands Agent to find out if you are in this watershed.

Notice to Adjoining Town. If your property is within 500 feet of an adjoining town, you must also send a copy of the application, on the same day you sent one to Mansfield, to the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.

The Statewide Reporting Form shall be part of the application and specified parts must be completed and returned with this application.

**Part J - Other Impacts To Adjoining Towns, if applicable**

- 1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site? \_\_\_Yes\_\_  No \_\_\_ Don't Know
- 2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality? \_\_\_ Yes \_\_  No \_\_\_ Don't Know
- 3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality? \_\_\_ Yes \_\_\_  No \_\_\_ Don't Know

**Part K - Additional Information from the Applicant**

Set forth (or attach) any other information which would assist the Agency in evaluating your application. *(Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)*

**Part L - Filing Fee**

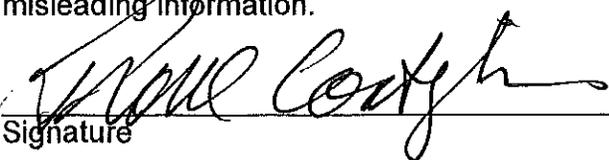
Application fees shall be in accordance with the current Mansfield Code of Ordinance fee Schedule, pursuant to Section 8-1c of the Connecticut General Statutes. The fee schedule includes provisions for applicant-funded consultant studies and reports. The current fee schedule is available in the Planning and Zoning office.

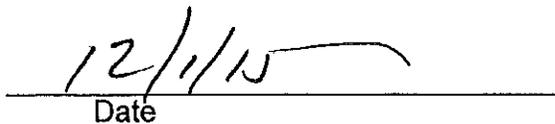
*Note: The Agency may require additional information about the upland review area or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.*

**Certification**

I hereby certify that:

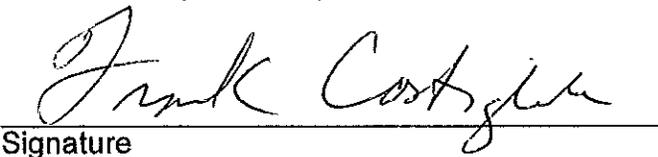
- I am familiar with the information contained in this form and that such information is true and correct to the best of my knowledge.
- I understand the penalties for obtaining a permit through deception or through inaccurate or misleading information.

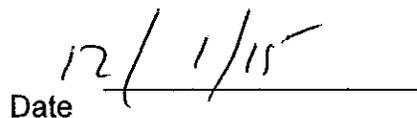
  
Signature

  
Date

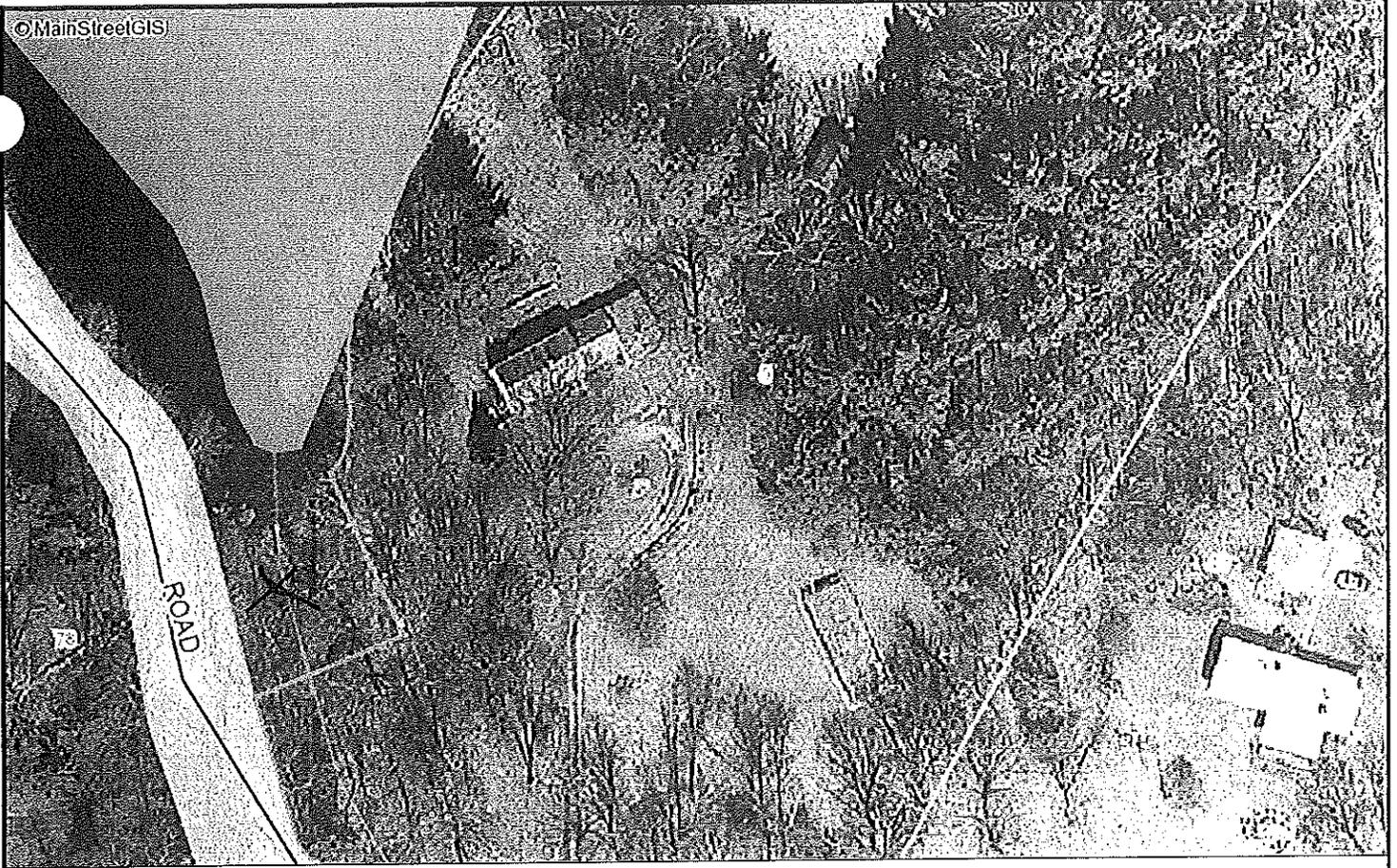
**Authorization to Enter Property**

The undersigned hereby consent to necessary and proper inspections of the above-mentioned property by members and agents of the Inland Wetlands Agency at reasonable times, both before and after the permit in question has been issued by the Agency.

  
Signature

  
Date

©MainStreetGIS



1 in = 79.06 ft

Printed on 12/1/2015  
Last update: Property information 3/20/2015, GIS parcel lines 12/31/2014

This map is for informational purposes only. It is not for appraisal of, description of, or conveyance of land. The Town of Mansfield, Connecticut and MainStreetGIS assume no legal responsibility for the information contained herein.



MainStreetGIS, LLC  
www.mainstreetgis.com

12/1/15  
Steve Conzick



©MainStreetGIS



1 in = 316.23 ft

Printed on 12/1/2015  
 Last update: Property information 3/20/2015, GIS parcel lines 12/31/2014

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 MainStreetGIS  
 MainStreetGIS, LLC  
 www.mainstreetgis.com

83 Dunham Pond Road  
Storrs, CT 06268

December 1, 2015

Jennifer Kaufman  
Inland Wetlands Agency  
Mansfield Town Hall  
4 South Eagleville Road  
Storrs-Mansfield, CT 06268

RE: **Data** for Inland Wetlands Agency in evaluating  
Storm Surge through Dunham Pond Outlet Channel

Dear Ms. Kaufman:

I would like to illustrate my concern about the quality of repair work on the channel wall of Dunham Pond Brook, why it is so important that any repair along this normally babbling brook, including the vegetation in the wetlands above the height of the stone wall, be able to withstand the brunt of a heavy storm or hurricane. *Only 2 items* in the attachment to this letter are relevant:

Table 1: pp. 31-2

Figure 3: p. 38

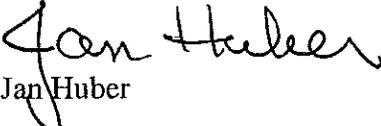
Dunham Pond has served as a study site for several generations of UCONN researchers, most extensively by Professor Peter Rich in the mid-seventies. The attached copy is the most recent, done in 2005 by students of Dr. Jason Vokoun of UCONN's Department of Natural Resources and the Environment. I converted some of the 2005 data from Table 1:

<u>Dunham Pond:</u>	Surface Area	=	10.82 Acres
	Shoreline	=	2,798.56 Feet
	Volume	=	23,651,319.16 Gallons
	Maximum Depth	=	14.01 Feet

During a lengthy storm event – even ½ inch per hour – all of the excess water in the pond has to squeeze through that narrow channel, not only the 10.8 acre pond surface, but also that descending from the pond's watershed (See Figure 3, p. 38). The biggest change in the pond watershed was Glen Ridge: Formerly open land was covered with housing, garages and asphalt. Its storm drainage system forces run-off through pipes, discharging it directly down to pond level. In Sept-Oct, 2013, Grant Meitzler confirmed to me that when Glen Ridge was built, the Town did not require that developers install catchment basins. As a result of Glen Ridge, I had to replace the single culvert that allows the brook to exit my property with 3. Also, since that time the post-storm drainage on my property has changed: Previously, the water remained high for about 3 days. Now floods seem to return to the stream bed in about a day and a half.

Soil and debris washing down from the upstream channel of the Brook would be a powerful threat, reducing the capacity of my catchment basin – capacity so recently “reclaimed” by the Town's installation of 3 Level Spreaders to divert run-off from Dunham Pond Road East.

Sincerely,

  
Jan Huber

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# **Management Plan for Dunham Pond, Storrs, Connecticut**

University of Connecticut, 2005 Fisheries Management Class

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Advised by Dr. Jason Vokoun

## **Introduction**

Dunham Pond is small natural pond found in Mansfield, Connecticut. The fisheries management class, instructed by Dr. Jason Vokoun, has developed this report with management recommendations for presentation the Dunham Pond Watershed Association. Data provided throughout this report was collected by sampling the physical and biological attributes of Dunham Pond on a weekly basis from September 8 to October 27, 2005. Through meeting and discussing concerns and history of the lake with Derek Allinson the fisheries management class has developed some background information for the pond, as well as regarding the watershed association's main goal to maintain and preserve the lake the with less intrusive management actions deemed necessary.

The rationale for creating this management plan for Dunham Pond is to provide the fisheries management students hands on educational experiences in addition to providing information to the Dunham Pond Watershed Association. Through sampling, processing, and analyzing data collected from Dunham Pond the class has had a chance to apply techniques learned in the classroom setting to real life situations. Dr. Vokoun created this cooperative study to train students in many aspects of the science of fisheries management mimicking the way the professionals might deal with public. The study on Dunham Pond also allows the watershed association to gain further knowledge regarding the condition of the pond ecosystem, which is the primary objective of this study.

Besides the overall condition of the pond the watershed association had specific concerns regarding the expanding aquatic vegetation and filling in of the pond by sedimentation. This study provides information on the condition of the pond while also providing possible recommendations to manage potential problems and concerns.

Dunham Pond is a natural pond that is likely the result of relatively recent glaciations (Flickenger et al. 1999). Information obtained about the history of Dunham Pond from an on-site visit with Derek Allinson revealed that the pond was probably last stocked with fish in the early 1960's. The species that were stocked are unknown, although trout were among the species stocked. Currently the pond receives very little fishing pressure and harvest. This barely exploited fish assemblage was the focus of several sampling activities. Old, slow growing fish with low annual rates of mortality and a population that remains in equilibrium are general characteristics of an unexploited fish stock (Kohler and Hubert 1996). The most modern management philosophy of small ponds used for recreation is "sustained or improved fish quality and favorable benefit-cost ratios" (Kohler and Hubert 1996). This philosophy suggests that small ponds can be managed in a less-intrusive manner and can be sustained near an equilibrium such that fish assemblages are relatively stable through time.

In the late 1950's Dunham Pond Road was built adjacent the southern end of the pond. The road has four storm drains which run into the pond. There is one house that borders the pond on the south side. The north region of the pond is a wetland area that sits on stratified layers of sand and gravel, owned by Joshua's Tract Conservation Trust (Rich 1975). Joshua Trust lands also borders the pond on the opposite side as Dunham Pond Road. The Pond has two intermittent flowing streams that it receives, and one

outflow that runs out of the southern end of the pond directly into the Willimantic River. About 25 years ago there was some dredging at the mouth of the exit brook done by the watershed association.

In order to develop a management plan, three main objectives were drawn that required a variety of field work to better understand the Dunham Pond aquatic ecosystem. Objectives one and two were to focus field work and lab analysis on collecting and processing data so the physical and biological structure of the pond could be defined. The third objective was to compare information collected with this study to historical data on Dunham pond and discuss our findings with other data relative to management possibilities.

By applying knowledge and skills learned in the classroom, the bathymetry of Dunham Pond was delineated. In addition to bathymetry, other physical characteristics of the lake were examined. The relevance behind collecting data on physical attributes of the pond is to examine the habitats in which organisms live. Habitat is a main component in an aquatic ecosystem and provides the “physical and chemical conditions necessary for existence” (Kohler and Hubert 1996).

The biological attributes of the pond are composed of vegetation, fish populations, insects, and zooplankton. In the science of fisheries management it is essential to demarcate the structure and density of fish populations as well as assess organisms with which they interact. The potential expanding littoral vegetation was a prime concern of the watershed association, so a focus was placed on determining whether or not this was a problem that will continue and how it would affect the health of the pond. The fish, macroinvertebrate, and plankton community were sampled by several

methods allowing a look at the aquatic biodiversity of the pond. The main focus of sampling was placed on the fish community. By sampling the fish population of Dunham Pond it was possible to quantify the population size and structure, age and growth, and diet analysis of fishes found in the pond.

The results of sampling and analysis will be compared to historical data of Dunham Pond and other relevant literature. Dr Peter Rich, a limnologist at the University of Connecticut, published two papers on work done on the limnology of Dunham Pond. Dr. Rich's first paper was accepted by the International Association of Theoretical and Applied Limnology in 1975 titled *Benthic metabolism of a soft-water lake*. The second publication was titled *Differential CO<sub>2</sub> and O<sub>2</sub> Benthic Community Metabolism in a Soft-Water Lake* published by Journal of Fisheries Research Board of Canada in 1979. By comparing data collected by Rich in 1973-1974 to that data that was collected this past fall it will be possible to quantify changes in the physical structure of Dunham Pond.

## METHODS

### *Field Collection*

#### *Bathymetry*

Morphometric measurements were obtained by a field survey of Dunham Pond on September 22, 2005. The field survey consisted of 6 individuals in four boats taking depth and position measurements along transects (see Figure 1). Trimble GeoExplorer3 Global Positioning System (GPS) units were used to record positions where depth measurements were collected. Depth measurements (soundings) were taken in half meter increments with a pre-marked rope attached to a weight. Position measurements were

taken along transects when the pond bottom changed by 0.5 m, the change in depth was recorded on the GPS units. Transects were traversed from the southern outlet end of the pond to the northern pond boundary. Additional depth/position measurements were taken where transects would not have recorded necessary information on the change of depths within the pond. Pond boundary measurements were taken with GPS units along the outside edge of the pond by stationary points at the waters edge and a near-shore kayaked outline.

### *Aquatic Vegetation*

In order to create the diversity list a grid was made, dissecting the floating-leaved plant bed into four quadrants. Each quadrant was then split into six sections, and a die was rolled in order to randomly select two sample sites in each quadrant. Once sampling sites were chosen, we sampled the length of the 14 foot Johnny boat being used to a depth that could be reached with a view tube, as a standardized sampling area at each site. The view tube being used was made of PVC pipe three feet long with clear lenses at each of its ends. We then used the view tube to locate, then remove a small stem and identify newly recognized plants at each of the eight sites. This allowed for submerged plants to be seen clearly, without interference from glaring sunlight. Those plants that could not be identified in the field were contained in plastic bags with water to later be identified in the laboratory. Sources used to identify plants included; Petty (2005), Texas Cooperative Extension (1985), Crow (1981; 1982; 1989), Prescott (1969), and Warren (2002).

In order to map the extent of submerged vegetation from the shore, we had to sample from the pond bottom starting at the littoral zone and working out perpendicular to the shore. This was done using an Ekman dredge, dropping it down at half meter

increments until submerged vegetation was no longer found. At this point the boat was anchored and a position taken, with Trimble Geo3 GPS units. This was repeated at multiple points around the pond to demarcate the area of the pond bottom inhabited with submerged plants.

Mapping the extent of the lilies was done in much of the same ways as the submerged vegetation. Kayaks were used to track the outer limits of the lily bed, while GPS units created a polygon image recording the lilies extent.

### *Fish Collection*

An 18 foot electro-fishing boat with a Wisconsin ring setup was used to sample fish on October 6, October 13, and October 20, 2005. All fish species were sampled by two netters in the bow of boat. Fish were then placed in a live well until worked up.

Four modified fyke nets were set with the lead part of the net on the shoreline of the pond and the trap section extended outward. They were set on October 26<sup>th</sup> at approximately 2pm soaked for roughly 24 hours before being checked. The nets were placed using a randomization method where the pond itself was split into quarters then within the quarters split again into quarters. Each of the 4 initial quarters had a net in it and placed randomly within the smaller quarters. These nets work by having the initial lead extended to the shore and the trap itself near the center of the body of water (Figure 2.) After the 24 hour soak the nets were carefully brought into the boat in a horizontal manner to ensure that no fish would be lost. The fish caught within the fyke nets were then measured to nearest millimeter and released.

### *Fish Handling: Length, Weight and Scales*

Captured fish were brought back to the dock and temporarily placed in a cooler. Each fish was measured to the nearest millimeter and given an identification number. Scales were taken from largemouth bass and bluegill with total lengths greater or equal to, 100 mm and 120 mm, respectively. Scales were taken with a knife by scraping behind the pectoral fin, and put into coin envelopes that corresponded to the fish's identification number. Data was also recorded onto a data sheet that matched all information taken on each coin envelope. All fish were released after scales were taken. Fish envelopes were left out to dry for at least 24 hours before being stored.

#### *Fish Handling: Tagging*

Bluegill (*Lepomis macrochirus*) and largemouth bass (*Micropterus salmoides*) of stock size were tagged using a semiautomated T-bar anchor-tagging gun. The fish were tagged on the left side of the body just below the dorsal fin. The steel shaft of the tagging gun was inserted underneath a scale into white muscle. White muscle has fewer blood vessels than does red muscle (Guy et al. 1996). The tag is inserted at a 45 degree angle until the tag has passed the midline of the fish. The tag head is placed behind the pterygiophores to prevent tag loss. The tagging gun was then twisted 90 degrees and the shaft is withdrawn. Each tag is gently tugged to make sure it is in place. If the tag was not successfully in place then no additional tags were attached. Additional trauma of a second tag increases mortality (Guy et al. 1996). After each fish was tagged the needle of the tagging gun was sterilized in alcohol. To ensure tagged fish were recognized, fin clipping was also used. The dorsal fin of the fish were notched with a hole punch. The notch was made perpendicular to the dorsal fin no more than halfway from the base of the fin (Guy et al. 1996).

### *Fish Diet Analysis*

Stomach contents of 4 largemouth bass and 6 bluegill from Dunham pond on October 6, 2005 were analyzed for diet analysis. All sizes of fish were collected and transported to a central dock, where data collection took place. The fish were held in a large cooler filled with pond water while length, tag, and scale data was recorded. Stomach contents were collected via a gastric lavage, which was comprised of a squirt bottle filled with water and various sizes of tubing coming out of the cap. All fish sampled were larger than 60 millimeters total length. Fish were held upside while a 3mm or a 6mm piece of tubing was fed through the esophagus and into the stomach. A sieve of 500 micrometer size was held under the fish while the squirt bottle was squeezed which flooded the stomach. Stomach contents were flushed out of the mouth as the tubing was pulled out. The contents were scraped out of the sieve and placed into individual 10% formalin solution vials.

### *Invertebrates and zooplankton*

Macroinvertebrate and zooplankton samples were collected from Dunham Pond on October 27, 2005. Macroinvertebrates from littoral aquatic vegetation and benthic samples from the deeper region of pond were collected. Zooplankton samples were taken from the open water area of pond. All samples were placed and stored in 10 percent formalin.

Macroinvertebrates sampled in the littoral vegetation area were collected by students from a canoe using a D-frame aquatic net. The net was slowly worked through vegetation of the littoral zone in 4 random areas on Dunham Pond. All materials collected in the net were placed in plastic containers and saved for later analysis in the

laboratory. Macroinvertebrates from sediments were collected by students from a 14 foot Jon Boat using an Ekman grab in 4 different areas. An Ekman grab is a 6in x 6in x 6in metal box with jaws at the bottom. The grab is lowered from the boat by a rope until it reaches the bottom of the pond. Once bottom is reached a metal weight, or “messenger”, is sent down the line and this triggers the jaws to close collecting the benthic sediment sample (Murphy and Willis 1996). Samples were stored in 5 gallon buckets.

Zooplankton samples were collected in 6 different sites by students on the 14 foot Jon boat. Zooplanktons were collected using a circular zooplankton net with a diameter of 1 foot. The net is lowered vertically into the water column open end up until it reaches bottom then pulled up to the boat slowly. The nets filter the water as they are being retrieved and zooplankton is concentrated in a cup at the bottom of the net.

## ***Laboratory***

### ***Fish Aging***

Using tweezers, individual scales were cleaned, by dipping in alcohol and rubbing on paper towels to remove all mucous and debris. The scale was then dried, by wiping each onto a paper towel. Next, the scales were held up to a light to determine if there was any regeneration, if so the scale was discarded. Three to five non-regenerated scales were placed onto acetate with the concave side facing up, to insure proper impression. A small piece of cardboard was placed over the top of the scales to hold them in place. Scales were then sent through a scale press, each slide was marked with an identification number, indicating which fish it belonged to. A sub-sample of both bluegill and

largemouth bass were examined based on 10 millimeter size increments. The objective was to age at least one fish per size increment per species. Thirty-three bluegill and eighteen largemouth bass were aged, out of a total sample of seventy-six and twenty-five, respectively. To limit age estimate error; scales were aged using a concert read technique, which in our case was two groups of three people aging each fish's scales through a micro fiche reader. A fourth person was called upon when age could not be determined by the readers to settle any age discrepancies. Validation was performed by rereading the first 15% of each group's scales to confirm the accuracy of determined ages. Techniques used for scale preparation was taken from Fisheries Techniques, Chapter 16 (Devries and Frie 1996).

#### *Fish Diet Analysis*

Once transported to the laboratory, 10% formalin was replaced with 80% alcohol. Contents were examined under microscopes and organized into groups of fish remains, invertebrates, snails, zooplankton and plant remains.

#### *Invertebrates and zooplankton*

Aquatic Vegetation macroinvertebrate samples were sorted through and invertebrates were identified to their taxonomic family level and counted. Due to time constraints benthic invertebrate samples and zooplankton samples were not processed.

#### *Analysis*

##### *Bathymetry*

After the field survey the data from the Trimble Geo3 GPS units were downloaded onto a computer. Using the program, GPS Pathfinder Office, data was

differentially corrected using base station files from the University of Rhode Island (URIL) Continuously Operating Reference Station (CORS). PDOP values ranged from 2.2 to 7.7 for individual position measurements. The data were then converted to shapefiles so that it may be brought into ArcGIS8 for further spatial analysis. The data were then mapped (See Figure 3) to display watershed characteristics. After display, a kriging method was applied in GIS. "Kriging is an advanced geostatistical procedure that generates an estimated surface from a scattered set of points with z (elevation) values." (ESRI ArcGIS). This method allows prediction of the values in which no points were taken (See Figure 4). Next, contour lines were fitted to the predicted krig of Dunham Pond (See Figure 5) to map the bathymetry of the pond. Because kriging fits a mathematical model to the available data, some of the contours, specifically those for twelve, thirteen and fourteen feet, mapped in a fashion that may not be as close to the true pond characteristics as shallower depths. These contours were then reshaped based on the krig of the pond in order to display a more accurate representation of the bathymetry in those areas.

A series of calculations were completed on the data to conclude the important morphometric parameters of the pond. Area (A) and volume (V) were both determined with tools provided in the ArcGIS program from the bathymetry data of the pond. Max depth was determined to be that measurement of which was the highest, 14 ft, during the field survey. Next mean depth ( $Z_m$ ) was calculated using the following formula from Wetzel (1983)

$$\bar{Z} = V / A_s$$

Length (l) is defined by Wetzel as the distance on the lake surface between the two most distant points on the lake shore. Dunham Pond has the longest fetch from the

southern outlet to the northern boundary. It was in this direction that distance was measured to represent the length of the pond. The maximum width or breadth (b) was calculated with the formula provided by Wetzel as

$$b = A / \ell$$

Shoreline development index was calculated using the formula (Gallagher 1999)

$$L = \frac{P}{\sqrt{A}}$$

where P is the perimeter of the pond

Relative depth, which is the ratio of the maximum depth as a percentage of the mean diameter of the lake at the surface (Wetzel 1983) was computed using the following equation

$$Z_R = \frac{50 Z_M \sqrt{A}}{\sqrt{A_s}}$$

Volume development was lastly determined using Wetzel's formula:

$$D_V = 3 Z / Z_M$$

### *Fish Population Structure*

An age-length key was used to compute an age-frequency for largemouth bass and bluegill. Length groups of 10 mm were used for both species. The number of fish belonging to each length group was determined. Next, the number of fish aged of each length group was determined. An age percentage for each length group was then used to allocate the entire length-group sample (Murphy and Willis 1996). The age structure was found by summing the numbers of each age group.

Length frequency histograms were made to represent rates of reproduction, recruitment, growth, and mortality of the age groups in the sample (Murphy and Willis

1996). Length groups are put on the x-axis using 10 millimeter length groups. Length frequencies were plotted as percentages of each length group on the y-axis.

Proportional stock density is the number of fish greater than the minimum quality length divided by the number of fish greater than the minimum stock length. The minimum quality and stock lengths for largemouth bass and bluegill were taken from table 15.2 of fisheries techniques (Murphy and Willis 1996). Stock length is defined as the approximate length at maturity, minimum length effectively sampled by traditional fisheries gears, and provide recreational value. Quality length is the minimum size of fish most anglers like to catch (Murphy and Willis p466). The PSD for bass is the percentage of 20 cm and longer fish that are also longer than 30 cm. The PSD for bluegill is the percentage of 8 cm and longer fish that are also longer than 15 cm. Proportional stock density numbers were calculated for largemouth bass and bluegill to describe the length frequency data. The following equation was used to calculate the PSD.

$$\text{PSD} = \frac{\text{number of fish} \geq \text{minimum quality length}}{\text{number of fish} \geq \text{minimum stock length}} \times 100$$

Once PSD were calculated they were compared to accepted stock density ranges (from Murphy and Willis 1996).

Chapmans modification of the Peterson index was used to estimate a population of stock sized bluegill and largemouth bass. Stock sized bluegill and largemouth bass are 6 and 20 centimeters, respectively:

$$\hat{N} = \frac{(M+1)(C+1)}{(R+1)} - 1$$

While M is the number of fish collected and marked during the first sample, C is the number of fish collected the second example and R is the number of recaptures (Murphy and Willis 1996).

Variance of the Chapman modification was calculated using the following formula:

$$V(\hat{N}) = \frac{(M+1)(C+1)(M-R)(C-R)}{(R+1)^2(R+2)}$$

95 percent confidence of population estimates were calculated using the following

formula: 95% confidence =  $\hat{N} \pm 1.96\sqrt{V(\hat{N})}$

#### *Fish Diet Analysis*

Frequency of occurrence, mean percentage by number, and mean percentage by weight were calculated. Frequency of occurrence is the proportion of the fish that contained one or more of a given food type. Frequency of occurrence is the fastest approach to quantitative analysis of fish diets (Murphy and Willis 1996). The mean percentage by number is the number of item of a given food type expressed as a percentage of the total number of food items counted. Mean percentage by weight is the weight of items of each food type expressed as a percentage of the total weight.

#### *Invertebrates and zooplankton*

Aquatic vegetation macroinvertebrate samples frequency and mean percent by number were placed in a table along with frequency of occurrence and mean percent by number of total specimens from each sample. Mean percent by number is simply the

number of individuals of a certain family divided by the total number of collected.

Frequency of occurrence is a proportion showing the occurrence of each family in total samples, so if a certain family was found in 2 of 4 samples, the frequency of occurrence would be 0.50 (Murphy and Willis 1996).

## Results

### *Bathymetry*

Dunham Pond is small (4.38 HA; 89,530 m<sup>3</sup>), within a 44.8 HA watershed basin (Rich 1979) in Storrs, Connecticut. The pond is still considered to be shallow ( $Z_R = 1.81\%$ ), with a maximum depth of 4.27m ( $Z = 2.05$  m) and simple ( $D_i = 1.15$ ) in overall basin shape. The present study found a trend in the decrease of available habitat provided by the pond itself when compared to Rich's 1977 study (See Table 1). A decrease in the area and volume of the pond is evident and may be being caused by a number of anthropogenic influences. Some of these influences involve the change in surrounding land uses, with the increase number of homes and roads that have been added to the landscape, since the time of Rich's study. During Rich's study in 1977 he noted that only one home was within the catchment's area; today there are several homes found in the catchment's area. Although a decrease in area and volume has been seen, an increase in the shoreline development index by 0.04 was found. This increase may indicate that the amount of littoral zone present has increased, thus providing more cover during the summer months for fish.

### *Aquatic Vegetation*

Plant Diversity List: Cow Lily (*Nuphar variegatum*)

White Water-Lily (*Nymphaea odorata*)

Water Shield (*Brasenia schreberi*)

Coontail (*Ceratophyllum demersum*)

Swamp Rose Mallow (*Hibiscus moscheutos*)

Three species of floating-leaved plants were identified at Dunham Pond: Water shield, Cow lilies, and White Water-lilies. The extent of the lilies bed goes out from shore to a depth that ranges from 3-6 feet (Figure 6). All three floating-leaved water plants found at Dunham Pond prefer still or slow moving waters up to depths of five to six feet (Jenson Technologies 2005, Minnesota Department of Natural Resources 2005). Results show that the lilies have grown out to their extent on the southern and eastern shores. Figure 6, also shows the extent of submerged aquatic vegetation on the south and eastern shores ends with the floating-leaved vegetations boundary. The west and northern shores have submerged vegetation exceeding the boundary of floating-leaved vegetation by up to three feet.

#### *Fish Population Assessment*

Fish species found in Dunham Pond were primarily largemouth bass and bluegill sunfish. Other fish species found in low abundances include back crappie (*Pomoxis nigromaculatus*), chain pickerel (*Esox niger*), yellow perch (*Perca flavescens*), and pumpkinseed sunfish (*Lepomis gibbosus*). The age-length tables for largemouth bass and bluegill are shown in tables 2 and 3. Largemouth bass ages ranged from 4-14 years. Bluegill ages ranged from 2-9 years. The average age for largemouth bass was 8 years and the average age for bluegill was 4.5 years. Mean length at age are shown on figure 7

and 8 for bluegill and largemouth bass. Smaller fish were not aged, because we focused on mature, adult fish.

Histograms were constructed for percent frequency of length groups relative to the whole sample (Figures 9 and 10). Thirty-two percent of the largemouth bass sampled were between 60-69 millimeters. Twenty percent of the sampled bluegill were between 40 and 49 millimeters. Length-frequency histograms for largemouth bass show that no fish were sampled between 110-159 millimeters and 290-320 millimeters.

Proportional stock density numbers were calculated for each species of fish

describing the length frequency data.  $PSD \approx 27 \div 105 \times 100 \approx 26$   
 $PSD \approx 5 \div 20 \times 100 \approx 25$

Figure 11 shows a grid comparing PSD of predators and Prey. Standard indices of PSD are shown in relation to where Dunham Pond scored. Dunham pond showed a mutual balance between predatory and prey.

The population estimate using the Chapman modification of Lincoln-Peterson model was 19 for largemouth bass and 866 for bluegill. Variance for largemouth bass population estimate was 36 and the bluegill is 226576. 95% confidence interval for stocksized largemouth bass population estimate is 7-30. 95% confidence interval for stocksized bluegill population is 0-1799.

### *Fish Diet Analysis*

Stomach contents of largemouth bass in Dunham Pond only consisted of fish remains and plant remains. Frequency of occurrence was .75 and .5 for fish remains and plant remains respectively. Mean percentage by number was 6% for fish remains and 4%

for plant remains. Largemouth bass gut contents were composed of 85% fish remains and 15% plant remains by weight (Table 4). Bluegill in Dunham pond were found to have invertebrates, snails, and zooplankton in their stomachs. Frequency of occurrence was 0.17, 0.83, and 0.5 for invertebrates, snails, and zooplankton respectively. Mean percent by number was 44% for invertebrates and 55% for snails. The amount of individual zooplankton were too numerous to count, therefore percent by number was not calculated for bluegill. Stomach contents of bluegill consisted of 18% invertebrates, 9% snails, and 72% zooplankton (Table 5).

#### *Invertebrates and zooplankton*

Due to time constraints the only samples that were quantified were the aquatic vegetation macroinvertebrate samples, although based on visual inspection zooplankton was abundant. There were a total of 8 different families found in the 4 aquatic vegetation macroinvertebrate samples. A total of 40 individuals were found overall. The most frequent family found was Gastropoda, followed by Amphipoda, and then Plecoptera, and lastly Notenectidae, Oligochaeta, Ephemerellidae, Ephemeroptera, Hirudinea, and Plecoptera were all found with the same frequency (Table 6).

## **Discussion**

In comparing this recent study to Richs' (Rich 1975;1979) a series of assumptions can be made with regard to the change in habitat. Firstly, decreases in maximum depth leads to a decrease in cooler water available for large fish during high surficial water

temperature during summer periods. Because of the decrease in depth and increase in warm water volumes, fish may become more stressed during long periods of hot temperatures. This ultimately may lead to increased mortality in each species. Secondly, area and volume decreases lead to a group of potential problems. With decreased volume more interaction between predator-prey occurs, leading to stunted growth as food availability decreases. Also O<sub>2</sub> levels decrease as the pond becomes shallower, thus decreasing the available habitat and increasing the probability of species interactions. During the winter, the decrease in volume lessens the available space for movement and prey avoidance within the deep oxygenated zone, thus increasing interaction rates. Lastly, the increase in Shoreline Development Index indicates more available habitat within the littoral zone. This has two main benefits to largemouth bass and bluegill. By increasing the littoral zone the available spawning habitat is increased, allowing for more successful spawning numbers from both bluegill and largemouth bass. Also, increasing the littoral zone provides more predator avoidance for juvenile fish. It should be noted that different techniques were used in collecting and calculating the morphometric parameters between the two studies. This may have added to the large differences between the conclusive calculations.

Dunham Pond's fish assemblage is very similar to other lakes and ponds found in Connecticut. Predator fish species found in Dunham Pond include chain pickerel and largemouth bass (Jacobs and O'Donnell 2002). Chain pickerel are found in almost all Connecticut's lakes and ponds. Largemouth bass are the most widely distributed fish species, and can be found in almost all of Connecticut's lakes and ponds. In Connecticut largemouth bass typically reach 12 inches in an average of 3.6 years (Jacobs and

O'Donnell 2002). Both largemouth bass and chain pickerel thrive in waters with abundant submerged vegetation, such as Dunham Pond. Panfish found in Dunham Pond include black crappie, yellow perch, bluegill and pumpkinseed. Bluegill sunfish are found in 97% of Connecticut lakes, making it the most abundant sunfish species in the state (Jacobs and O'Donnell 2002). Black crappie and yellow perch are also common to the state, they are found in 74% and 96% of lakes and ponds respectively. The only native fish species to Connecticut found in Dunham pond is the pumpkinseed sunfish.

Population assessment was based on a small sample size due to biological, environmental and technical factors that influenced catch (Reynolds 1996). Sampling time of day or season, vulnerability of fish, conductivity, water temperature, or personnel and organization could have influenced the number of fish collected. Gear selectivity plays a role in the size of fish caught. Larger fish experience a greater electric shock and are more vulnerable to electrofishing, which most likely influenced population assessments of Dunham Pond.

The accuracy and precision of an estimate of total mortality is affected by the number of age groups included in a sample. Age groups having fewer than five fish in a sample usually are excluded from the regression (Murphy and Willis 1996). Because of a small sample size of largemouth bass, total mortality could not be calculated. Total instantaneous mortality for bluegill came to 54%. This estimate is based on the assumption that the fishing exploitation rate is 0. This shows that 54% of stock length bluegill will die annually from natural causes. This low mortality rate is typical characteristic of unexploited fish population.

Largemouth bass and bluegills often occur in small ponds and represent a well-balanced predator-prey relationship (Schindler et al 2000). Balanced bluegill populations have PSD between 20 and 60 (Murphy and Willis 1996). Bluegill from Dunham pond had a PSD of 26 indicating a balanced population. Balanced largemouth bass populations have PSD between 40 and 60 (Murphy and Willis 1996). Largemouth bass from Dunham pond had a PSD of 25 indicating that there was a large number of large fish relative to the amount of small fish sampled. This would indicate that recruitment, growth and mortality are not satisfactory of a balanced system (Murphy and Willis 1996).

Uncontrollable variability in population dynamics such as recruitment can reflect misleading predator and prey PSDs (Murphy and Willis 1996). Guy and Willis (1990) show there is an inverse correlation between largemouth PSD and bluegill PSD. Therefore, if larger bass become relatively more abundant in Dunham Pond, they will begin to forage on larger bluegill resulting in a bluegill population with a lower PSD.

Both species show an increase in size with age. The age distribution of largemouth bass ranged from four to fourteen years showing an increase in size with age. The age distribution of bluegill ranged from two to eight years also showing an increase in size with age. The fluctuations in average length at age of largemouth bass are due to a small sample size. Length-frequency histograms for largemouth bass show that no fish were sampled between 110-159mm and 290-320 mm indicating potential problems such as year-class failures or annual mortality. Another problem could be associated with sampling inefficiencies.

Diet contents assist fisheries managers and biologists in analysis of growth, population dynamics, predator-prey relationships, as well as habitat of fishes. It is clear

that largemouth bass diet in Dunham Pond largely consists of fish (Table 4). By length of 100mm largemouth bass are primarily piscivorous (Olsen 1996). The small amount of plant remains found in the stomach contents is likely due to sit and wait predation in vegetated areas. Largemouth bass predation on bluegill is probable since high quantities of bluegill in the 30-59mm length class were collected. Research showed that age 0 and age 1 bluegill comprise 80% of diet in largemouth bass less than 14cm, and almost 70% of largemouth bass in 14-20cm size (Santucca and Wahl 2003).

The five species of aquatic vegetation found in Dunham Pond are typical of most small water bodies in Connecticut. It is common for aquatic vegetation to become a nuisance in small ponds and lakes due to decreased aesthetic and recreational value. Aquatic vegetation has been documented to have beneficial effects on a lake ecosystem. It can increase overall pond production and food organisms, as well as offer refuge to prey species (Durocher et al, 1984). In particular, aquatic vegetation indirectly contributes to fish growth and productivity by creating a much larger surface area in the littoral zone, increasing invertebrate production (Wiley et al, 1984). The cover provided by aquatic vegetation is a primary factor in survival of age-0 largemouth bass. Submerged vegetation is extremely important for the survival of fish one and older, as well as for fish of a harvestable size (Durocher et al, 1984).

Invertebrates play a huge role in monitoring aquatic ecosystems. By sampling invertebrates, biologists are able to assess the general health of aquatic environments as well as evaluate habitat and document pollution. Zooplankton and invertebrates are also the prey base of the food chain. This prey base is what bluegills and juvenile fish feed on, in turn providing energy to the predatory fish that eat them such as largemouth bass

(Murphy and Willis 1996). The results of Dunham Ponds invertebrate sampling shows there is a diverse and health population found in the aquatic macrophytes. Dunham Pond proves to be ecologically healthy. The abundance of zooplankton found in the pond will provide energy to the filter feeders found in the fish community.

The primary concern of the pond association was the spreading of floating-leaved plants. Results show the Cowl Lily, White Water-lily, and Water Shield have grown out to their maximum extent on the south and eastern shores. The north and western shores have potential to spread three more feet. The watershed association should not have concerns about floating-leaved plants spreading to any great extent.

### **Management Options**

Management of lentic systems is based on understanding ecological principles of trophic relationships and population dynamics (Flickinger et al. 1999). This information was gathered by subsequent sampling of Dunham Pond's biotic organisms and physical environment. One goal of fish biologists is to provide annual crops of harvestable size fish, but it is the responsibility of the pond owner to implement management recommendations (Flickinger et al. 1999). The census of the Dunham Pond watershed association is to maintain the pond in it's natural state, but management options could be beneficial in the future. The primary bluegill-bass relationship found in Dunham Pond offers a variety of fish management options such as no management, corrective stocking, trophy bass option, and panfish option (Flickinger et al. 1999).

The no management option allows Dunham Pond to stay in the most pristine condition. This management plan involves leaving the pond as it is. This is beneficial because it requires the least effort and money. This management option could be most appealing considering the fishery is not a main concern of the watershed association. In general, the fish community of Dunham Pond offers recreational value. Largemouth bass PSD is too low to be categorized in a balanced population, so 'no management' may not benefit this species in the future. Implementation of this management plan is the least intrusive for the watershed association, but may not be most beneficial to the fishery.

Corrective stocking is a management method used to enhance the predator community, there by controlling the prey population. Dunham Pond's fish community is comprised largely of bluegill sunfish, which are prey species. The mark- recapture study shows that the largemouth bass population is not in balance with the bluegill population. In general, bluegill to largemouth bass ratio should be around 10 to 1 respectively. From population estimates made on Dunham Pond's bluegill and largemouth bass, their ratio is 45 to 1, respectively. Stocking of advanced sized predatory largemouth bass would potentially balance the fish community (Bennett 1971).

The objective of the trophy bass option is to produce larger sized bass that will be caught less frequently. This management option is achieved by implementing slot length limits and regulating harvest rates. By harvesting fish that are 20-38 centimeters in large quantities and releasing all bass over 38 centimeters competition is reduced and growth is increased. The average size of bluegill will be reduced because the larger bass will forage on bigger bluegill (Flickinger et al. 1999). This management technique is more beneficial to angling, and may not be as appealing to the watershed association.

The panfish option is geared toward larger panfish rather than largemouth bass. Panfish species in Dunham Pond that will benefit from this option include bluegill sunfish, pumpkinseed, black crappie, and yellow perch. By implementing a 38 centimeter minimum length limit on largemouth bass harvest, densities of largemouth bass 20-38 centimeters will increase and growth will slow. The high densities of largemouth bass will reduce densities of small panfish and allow growth for larger ones (Flickinger et al. 1999). Again, this management technique is mostly beneficial for anglers and since there is currently little harvest of bass in the pond this management technique may have little influence on the fish community.

Management strategies for aquatic plants should reflect both the ecological realities of aquatic systems and the practical uses for which the water is intended (Wiley et al. 1984). The watershed association is concerned with aesthetic quality and loss of access for recreational use. Management of unwanted aquatic vegetation can be undertaken through methods of mechanical, chemical, and biological means. Mechanical techniques consist of deepening waters through dredging, cutting or harvesting, drawing down water levels in order to freeze the littoral zone, and covering the pond bottom with weighted synthetic blankets. Chemical means of plant management includes the use of some sort of registered herbicide. In most cases there is a period of quarantine in which the water source cannot be used for a short period of time, until herbicide levels decrease. Biological controls are a more natural approach to the situation at hand. In this case herbivorous fish or crayfishes may be used to maintain levels of aquatic vegetation. Biological methods of control are controversial due to concerns of introduced species having negative effects to the environment (Summerfelt 1999). Along with their

concerns about floating-leaved vegetation encompassing the pond, a simple plan of management for Dunham Pond would be to harvest or cut small areas of the floating-leaved vegetation in desired locations. Although this method of mechanical management would be tedious and time consuming, it seems most appropriate for the conditions and the watershed association's goals. This method is the least invasive and most cost efficient. Harvesting alone must be done annually to obtain preferred outcomes. If annual management is undesired by the association, the application of pond bottom blankets after a cutting would greatly reduce the re-growth of unwanted aquatic vegetation.

Sedimentation of the lake from storm water inputs from the main road is a major concern of the watershed association. Management plans for the minimization of the impact of road sand would have to lessen the effect of any inputs that the lake is currently receiving. A few options can be implemented, ranging from low to high cost and upkeep, that would help in reducing the influence of road sand on the pond in the future. The least expensive option would be to put up silt fencing to help reduce the wash out of sand into the lake during periods of melt and fluid precipitation. This option although relatively cheap is not the most aesthetic, but it would help in creating a barrier so that sand would be less likely to make it to the pond. A second option would be to put in a grass swale between the pond and the road. This would allow water carrying sand and sediment to be retained in the swale before reaching the pond. This option although not costly except in manual labor would require more municipal approval, which would have to be brought up before proper boards and commissions before it could be implemented. The third option would be to fit the storm water drains with sediment traps. This option although

the most costly in the beginning might offer other benefits to the pond. Some filtration systems may also provide added benefit by improving water quality through removal of grease, and oil as well as sediments and debris. A few different types of traps are on the market now. Some are highly invasive, in that they take up a lot of major engineering and planning within the local government. Where as other are less invasive, in that they just fit directly into the existing storm water drains. A good example of this type of system is the Ultra-Urban® Filter with Smart Sponge® developed and manufactured by AbTech Industries, see attached flyer in appendix. This systems maintenance is light, with a vacuuming of the area in which the sediment and debris is captured and filter replacement every 1-3 years. Depending on the watersheds objectives any of the above options would help in reducing sand from entering and filling in the pond.

## References

- Bennet, G. W. 1971. Management of lakes and ponds. Ban Mostrand Reinhold, New York.
- Crow, C. E., Hellquist, C. B. "Alismataceae." Aquatic Vascular Plants of New England 3 (1981).
- Crow, C. E., Hellquist, C. B. "Juncaginaceae, Scheuchzeriaceae, Butomaceae, Hydrocharitaceae." Aquatic Vascular Plants of New England 4 (1982).

- Crow, C. E., Hellquist, C. B. "Lentibulariaceae" Aquatic Vascular Plants of New England 8 (1985).
- Department of Wildlife and Fisheries Sciences; 2005; Plant Identification; Texas Cooperative Extension; <http://aquaplant.tamu.edu>; Nov. 2005.
- DeVries, D. R., and R. V., Frie. Determination of Age and Growth. Pages 483-508 in C. C. Kohler and W. A. Hubert, editors. *Inland fisheries management in North America*, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- Durocher, P. P., Provine, W. C., Kraai, J.E. 1984. Relationship Between Abundance of Largemouth Bass and Submerged Vegetation in Texas Reservoirs. *North American Journal of Fisheries Management* 4: 84-88.
- ESRI ArcGis 8. How Kriging (3D Analyst) works.
- Flickinger, S. A., F. J. Bulow, and D. W. Willis. Small Impoundments. Pages 561-587 in C. C. Kohler and W. A. Hubert, editors. *Inland fisheries management in North America*, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- Gallagher, A. S. 1999. Lake Morphology. Pages 165-173 in M. B. Bain and N. J. Stevenson, editors. *Aquatic habitat assessment: common methods*. American Fisheries Society, Bethesda, Maryland.
- Guy, C. S., H. Lee Blankenship, and L. A., Nielsen. Tagging and Marking. Pages 353-379 in C. C. Kohler and W. A. Hubert, editors. *Inland fisheries management in North America*, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- Guy, C. S., D. W. Willis 1990. Structural Relationships of Largemouth Bass and Bluegill Populations in South Dakota Ponds. *North American Journal of Fisheries Management* 10:338-343.
- Jacobs, R. P., and O'Donnell, E. B., 2002. *A Fisheries Guide to Lakes and Ponds of Connecticut*. Connecticut Department of Environmental Protection, Hartford, Connecticut.
- Jenson Technologies; 2005; Control Water Shields With the Lake Mower; Jenson Technologies; <http://www.lakemower.com/water-shield.htm>; Nov. 2005.
- Kohler, D.D., and W. A. Hubert, editors. 1999. *Inland fisheries management in North America*, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- Maine Center for Invasive Aquatic Plants; 2004; Spatterdock; Maine Center for Invasive Aquatic Plants; <http://www.mciap.org/herbarium/Spatterdock.php>; Nov. 2005.

- McMahon, T. E., A. V. Zale, and D. J. Orth. 1996. Aquatic Habitat Measurements. Pages 83-120 in B. R. Murphy and D. W. Willis, editors. Fisheries Techniques American Fisheries Society, Bethesda, Maryland.
- Minnesota Department of Natural Resources; 2005; White Water Lily; Minnesota Department of Natural Resources; [http://www.dnr.state.mn.us/aquatic\\_plants/floatingleaf\\_plants/white\\_water\\_lily.html](http://www.dnr.state.mn.us/aquatic_plants/floatingleaf_plants/white_water_lily.html); Dec. 2005.
- Murphy, B. R., and D. W. Willis, editors. 1996. Fisheries techniques, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- Petty, D; 2005; APMS Plant Fact Sheet; The Aquatic Plant Management Society, Inc.; <http://www.apms.org>; Nov. 2005.
- Prescott, G. W. The Aquatic Plants. Iowa : WM. C. Brown Company Publishers, 1969.
- Reynolds, J. B., Electrofishing. Pages 221-251 587 in C. C. Kohler and W. A. Hubert, editors. Inland fisheries management in North America, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- Rich, P. H. 1975. Benthic Metabolism of a soft-water lake. *Berhandlungen. International Association of Theoretical and Applied Limnology*. 19: 1023-1028.
- Rich, P. H. 1979. Differential CO<sub>2</sub> and O<sub>2</sub> benthic Community Metabolism in Soft-Water Lake. *Journal of Fisheries Research Board of Canada* 36: 1377-1389.
- Schindler, D. E., S. I. Geib, M. R. Williams (2000). Patterns of Fish Growth along a Residential Development Gradient in North Temperate Lakes. *Ecosystems* 3:229-237.
- Summerfelt, R. C. 1999. Lake and Reservoir Habitat Management. Pages 285-314 in C. C. Kohler and W. A. Hubert, editors. Inland fisheries management in North America, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- Warren, Susan. Lake and Pond Plants: A Guide to Vermont's Common Aquatic Plants and Their Natural Values in Lakes, Vermont: Department of Environmental Conservation, 2002.
- Wetzel, R. G. 1983. *Limnology*, Second Edition. Saunders College Publishing.
- Wiley, M. J., Gorden, R. W., Waite, S. W., Pöwless, T. 1984. The Relationship Between Aquatic Macrophytes and Sport Fish Production in Illinois Ponds. *North American Journal of Fisheries Management* 4:111-119.

Table 1- Morphometric parameters from two studies collected on Dunham Pond, Storrs, Connecticut.

	P. H. Rich 1977 Study	Present Study (2005)	$\Delta$
Area ( $A_s$ )	4.74 HA	4.38 HA	0.36 HA
Volume ( $V$ )	114,140 m <sup>3</sup>	89,530 m <sup>3</sup>	24,610 m <sup>3</sup>
Max Depth ( $Z_M$ )	4.6 m	4.27 m	0.33 m
Mean Depth ( $\bar{Z}$ )	2.4 m	2.05 m	0.35 m
length ( $l$ )	----	335 m	----
width or breadth( $b$ )	----	130 m	----

Shore Line (L)	853 m	853 m	0 m
Mean Radius	123 m	---	---
Shore Line Development (D <sub>L</sub> )	1.11	1.15	-0.04
Volume Development (D <sub>V</sub> )	1.6	1.4	0.2
Relative Depth (Z <sub>R</sub> )	1.80%	1.81%	-0.01%

Table 2: Age length key of bluegill showing age-frequency distribution. Scales were aged for 34 individual bluegill.

Length-group (mm)	Number in Sample	Number (age) in subsample	AGE (yr)									
			1	2	3	4	5	6	7	8	9	
30-39	18											
40-49	42											
50-59	37											

60-69	2																	
70-79	11																	
80-89	7																	
90-99	8																	
100-109	11																	
110-119	3																	
120-129	9	3(4), 1(7)						7								2		
130-139	23	1(3),6(4),1(5),1(6)						2	15	3	2							
140-149	17	3(3),3(4),1(5),1(6)						6	6	3	2							
150-159	10	1(2),1(3),2(4),2(5),1(7)					1	2	3	3	1							
160-169	1	1(4)							1									
170-179	3	1(6)														3		
180-189	2																	
190-199	5	1(5)								5								
200-209	4	2(6),1(8)														3		1
210-219	1																	
220-229	0																	
230-239	0																	
240-249	0																	
250-259	1	1(7)															1	
total	215							1	10	32	14	11	3	1	0			

Table 3: Age-length key of largemouth bass showing age-frequency distribution. Scales were aged for a total 18 largemouth bass.

Length-group mm	Number in Sample	Number (age) in subsample	AGE (yr)															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14		
30-39																		
40-49	2																	
50-59	1																	
60-69	15																	
70-79	5																	
80-89	1																	

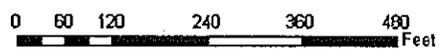
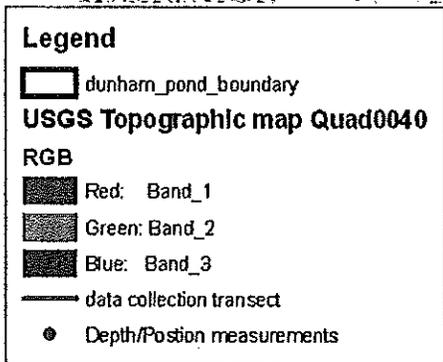
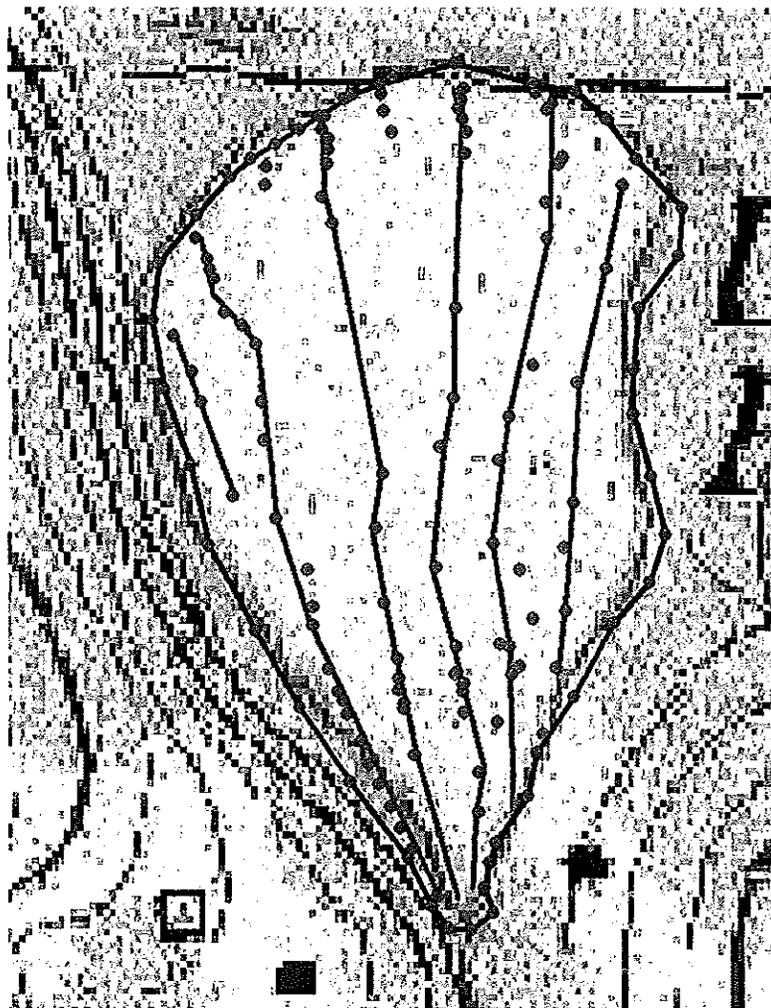


Table 5. Diet summary of Bluegill in Dunham Pond

	Frequency of occurrence	Mean percentage by number	Mean percentage by weight
Fish remains	-	-	-
Invertebrates	0.17	-	0.18
Snails	0.83	-	0.09
Zooplankton	0.5	-	0.72
Plant remains	-	-	-

Table 6. Invertebrate taxa found in aquatic vegetation in Dunham Pond. Percent (%) is mean percent. Frequency (Freq.) is a simple count. Frequency of occurrence (Freq. Occur.) is percentage of the four samples that contained respective taxa.

Invertebrate	Sample #1		Sample #2		Sample #3		Sample #4		Totals	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq. Occur.	%
Amphipoda	-	-	1	11.1	9	32.1	-	-	0.50	25.00
Notonectidae	-	-	1	11.1	-	-	-	-	0.25	2.50
Gastropoda	1	100	3	33.3	18	64.2	2	66.7	01.0	100.0
Oligochaeta	-	-	1	11.1	-	-	-	-	0.25	2.50
Ephemereilidae	-	-	1	11.1	-	-	-	-	0.25	2.50
Ephemeroptera	-	-	2	22.2	-	-	-	-	0.25	2.50
Hirudinaea	-	-	-	-	1	35.7	-	-	0.25	2.50
Plecoptera	-	-	-	-	-	-	1	33.3	0.25	2.50



1 inch equals 160.555489 feet

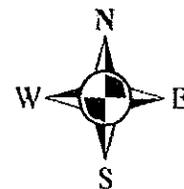


Figure 1. Depth/ Position collection points along transects on Dunham Pond, Storrs



Figure 2. Modified fyke net placement on Dunham Pond topography map

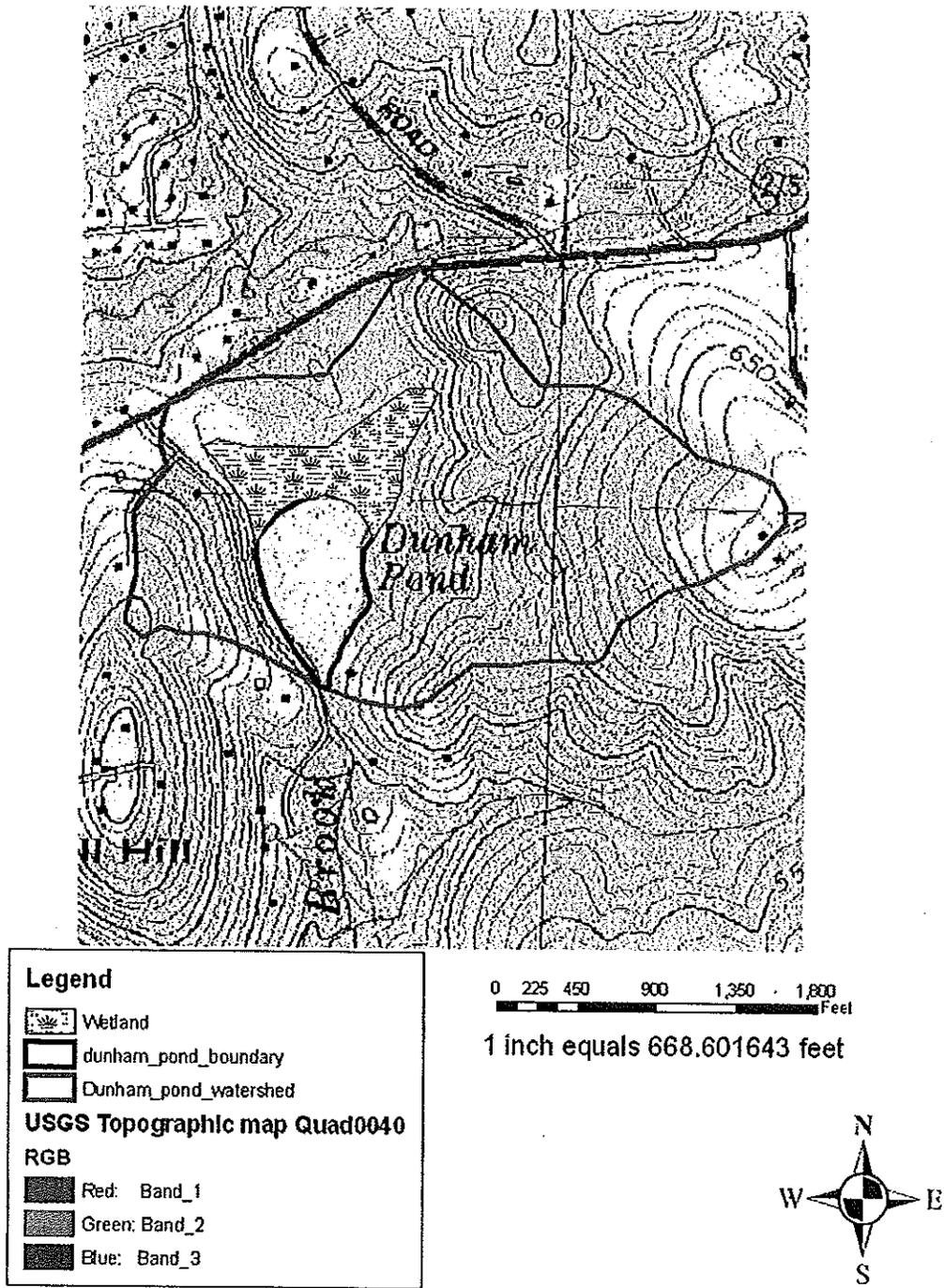


Figure 3. Site map of Dunham Pond, Storrs, Connecticut

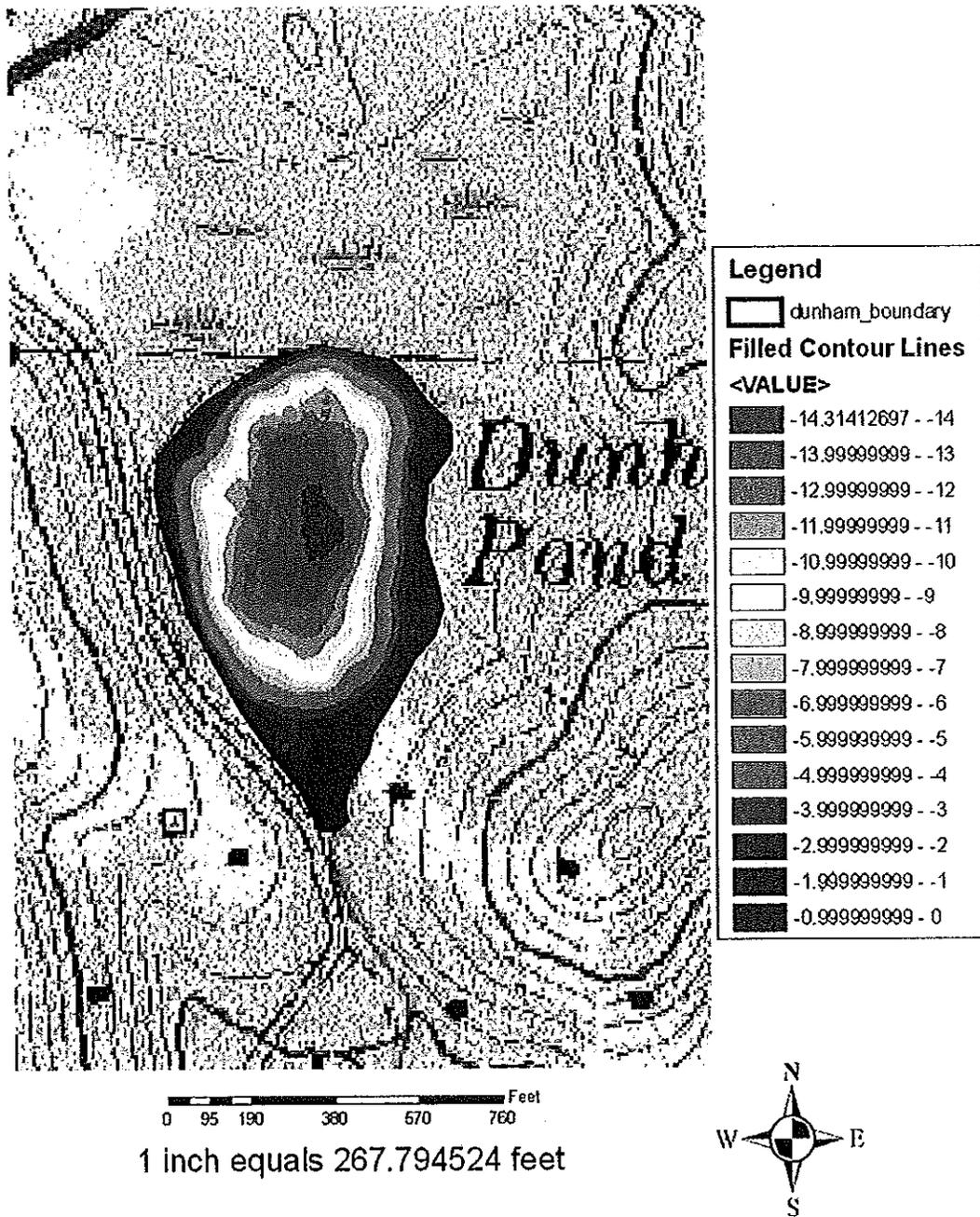


Figure 4. Bathymetric map (in Feet) of Dunham Pond, Storrs, Connecticut

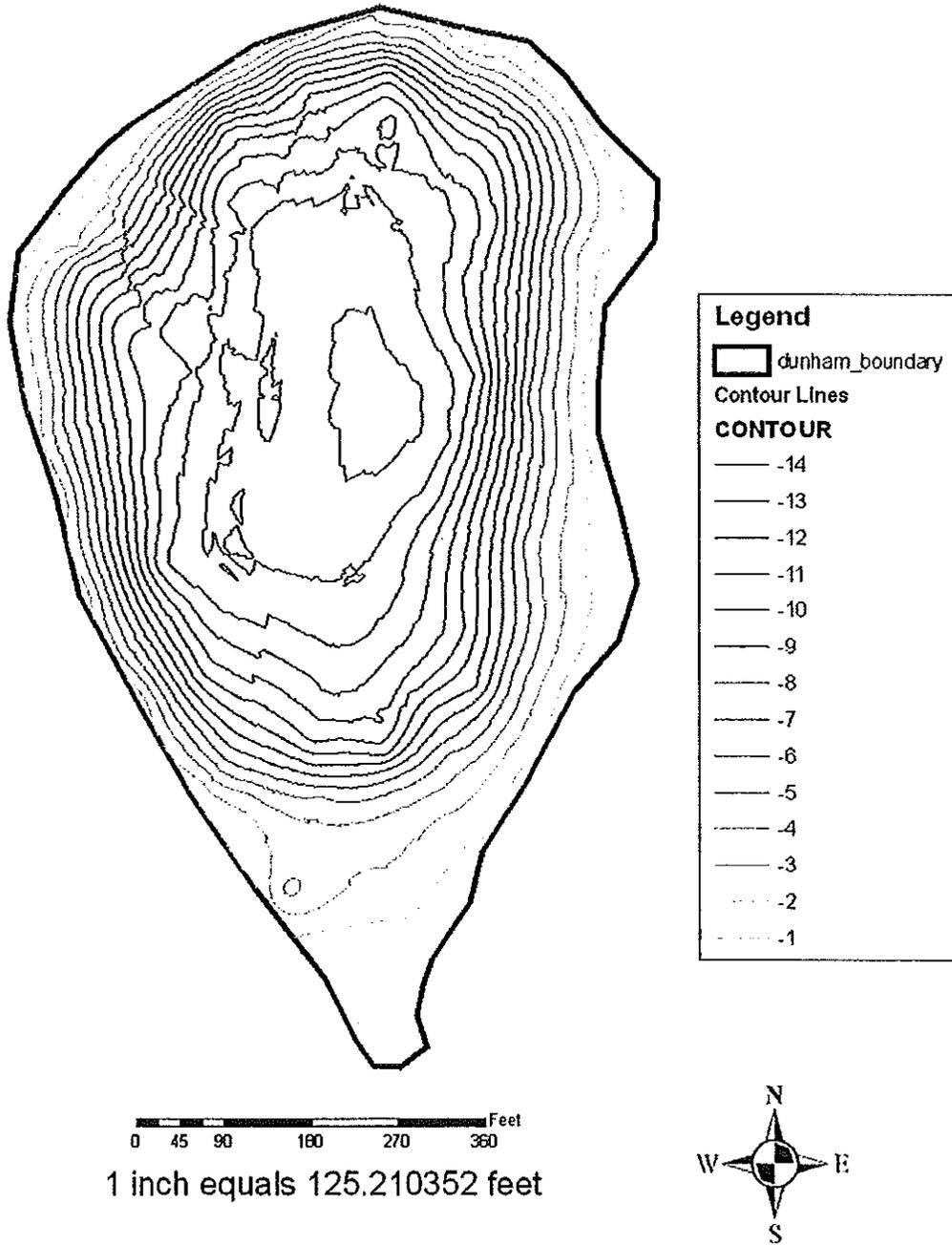


Figure 5. Bathymetric map (in Feet) of Dunham Pond, Storrs, Connecticut

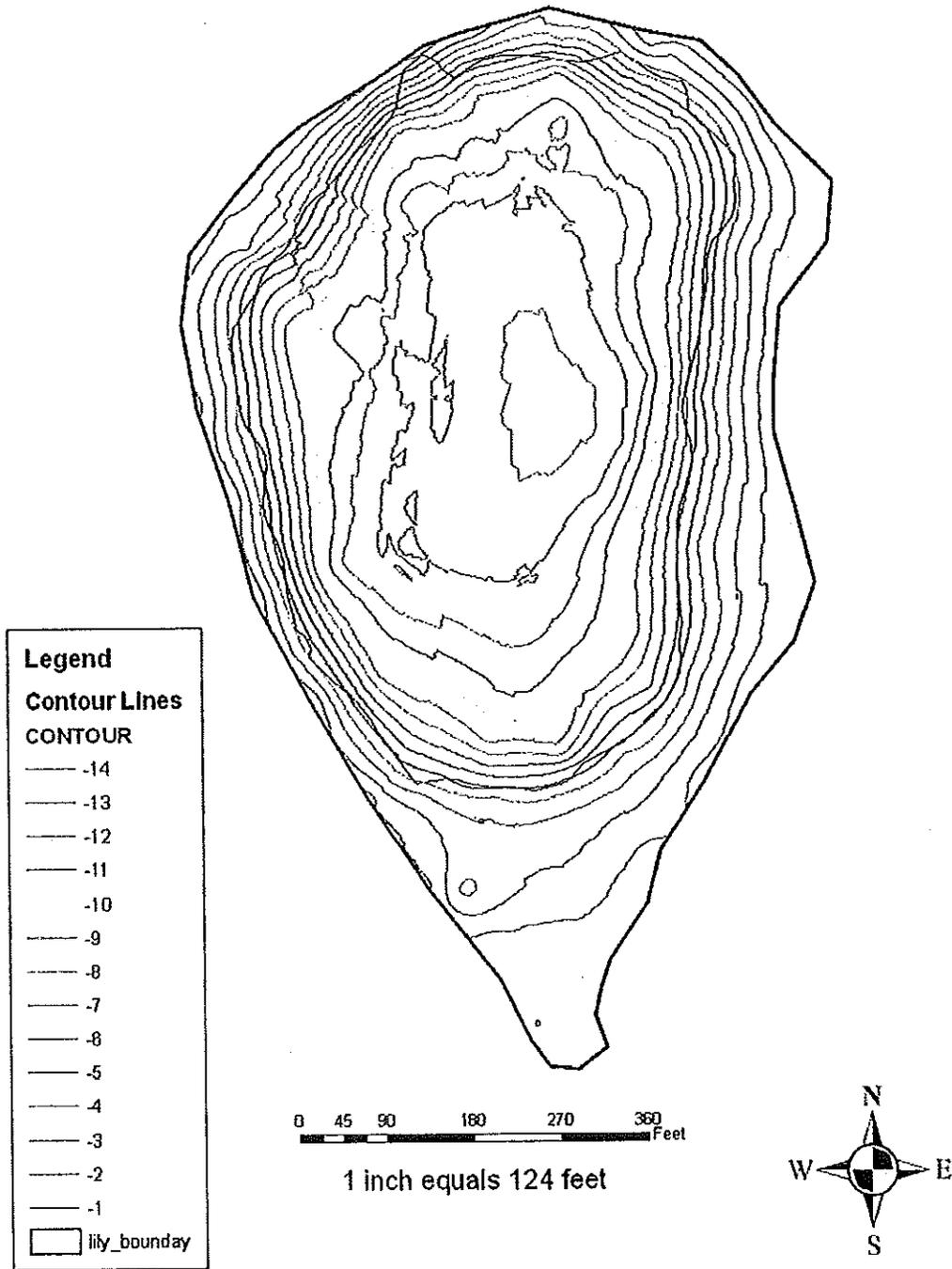


Figure 6. Extent of lilies in Dunham Pond with corresponding contour lines

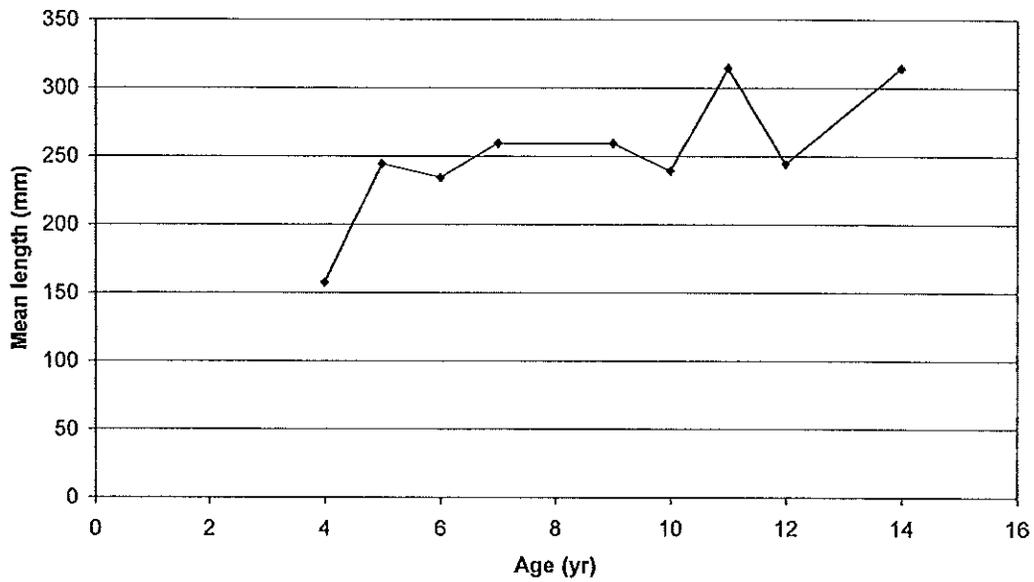


Figure 7. Mean length at age for largemouth bass in Dunham Pond, Storrs

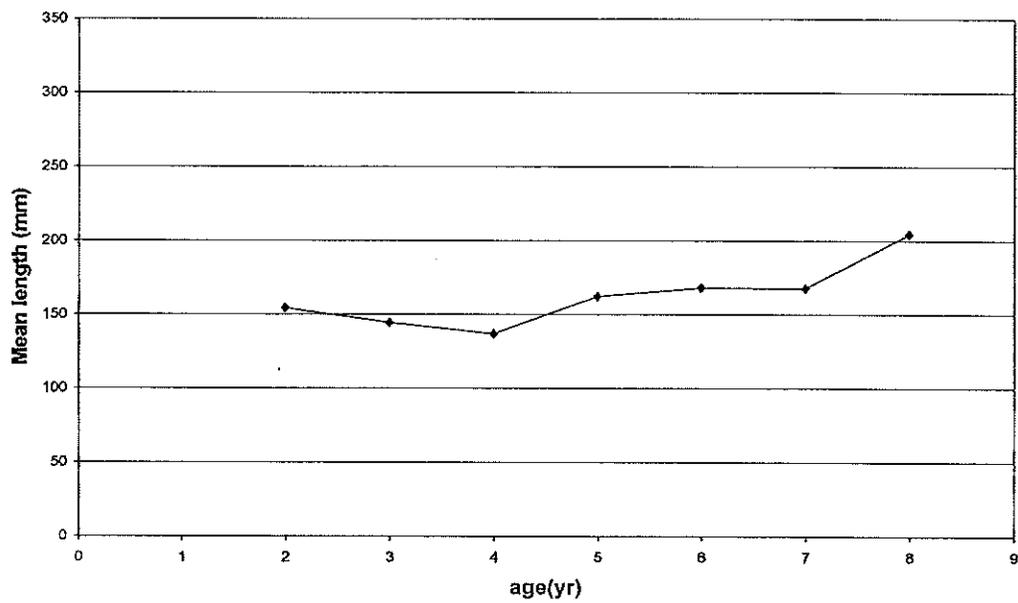


Figure 8. Mean length at age for bluegill in Dunham Pond, Storrs

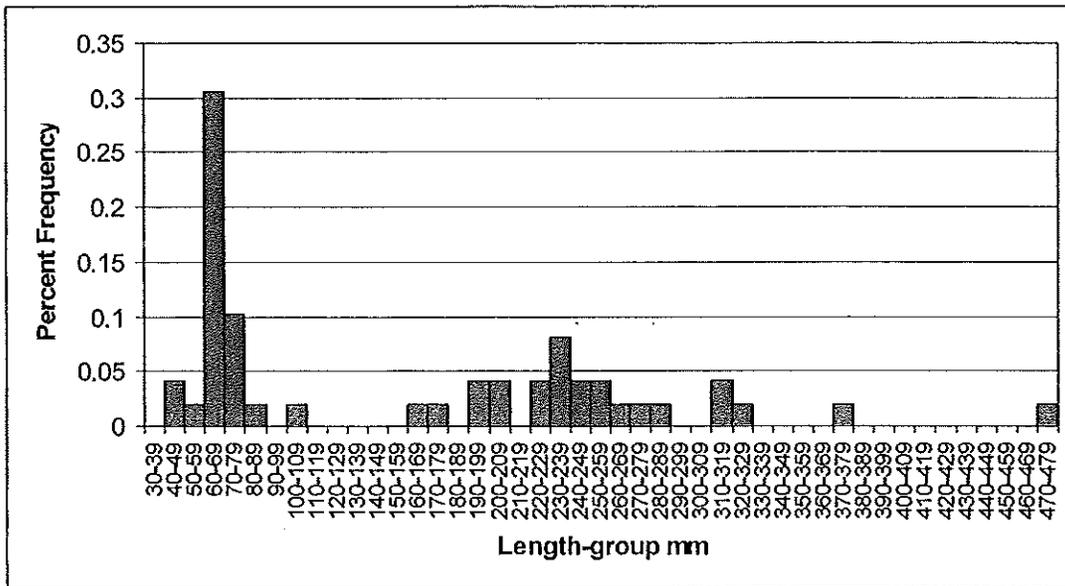


Figure 9. Largemouth bass percent frequency histogram in each length-group (mm)

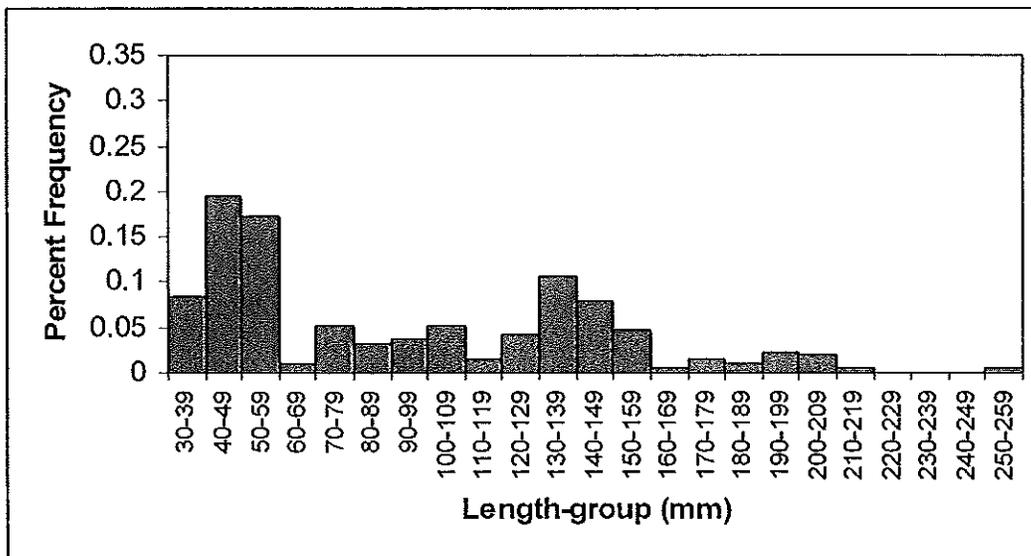


Figure 10. Bluegill percent frequency histogram in each length-group (mm)

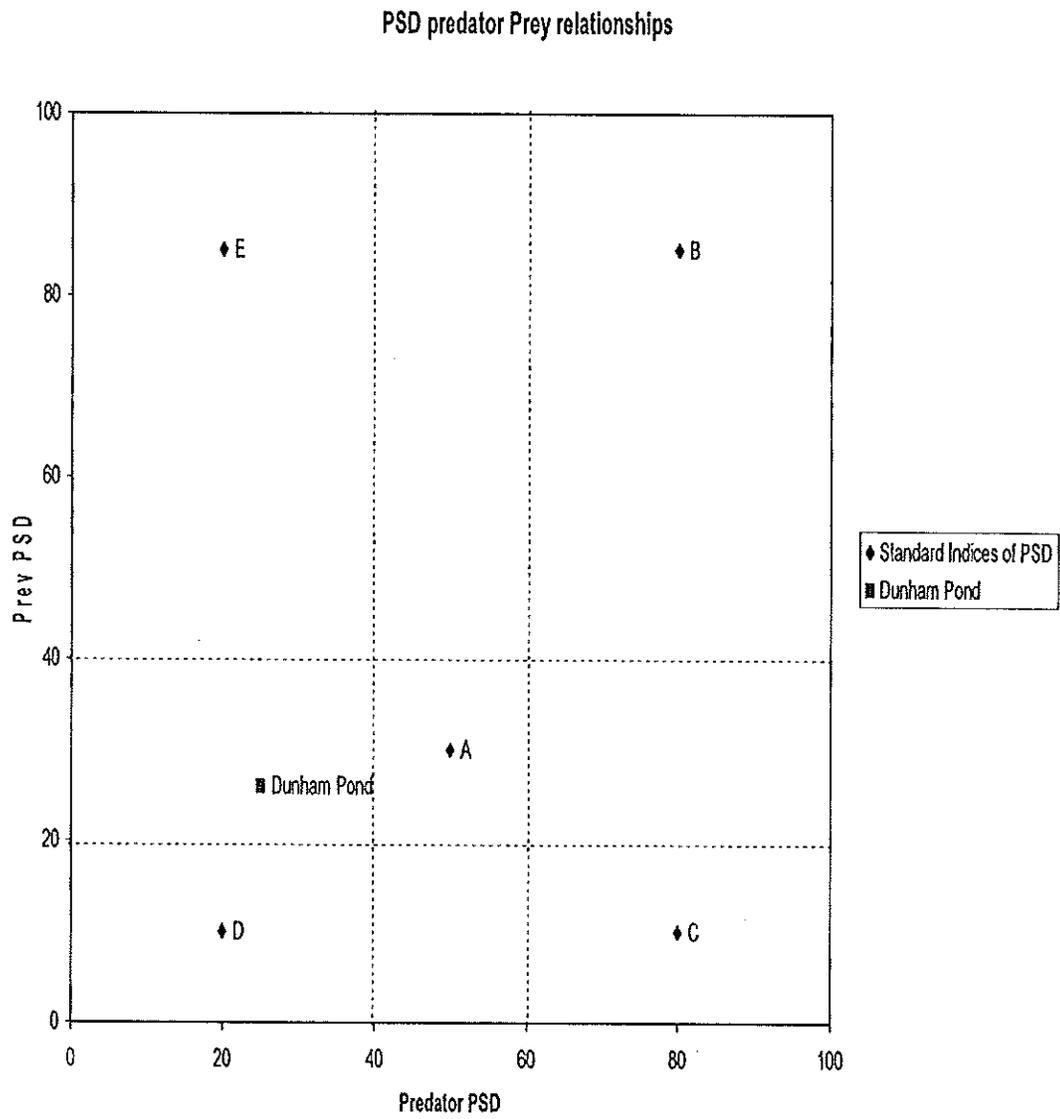


Figure 11. Relationship of Dunham Pond to standard indices of Predator-Prey PSD's



CACIWC Annual Meeting  
November 14, 2015

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**A. Your job as a wetlands commission member**

1. Implement the Inland Wetlands and Watercourses Act, CT General Statutes §§ 22a-36 – 44
2. Agencies are “creatures of statutes”; authorized to do only what their statutes set forth.
3. Not your job to protect wetlands or anything else that you subjectively think you should do.
4. Issue permits for “regulated activities” by balancing competing concerns and enforcing against those undertaking “regulated activities” without permits.

**B. Three branches of government: where wetlands agencies fit in**

1. **Legislature:** establishes the state’s policy by enacting legislation
2. **Executive:** wetlands agencies are part of the executive branch
  - a. executes or implements the law,
  - b. adopts/promulgates regulations to flesh out the policy contained in the statutes; regulations may not change the legislative policy;
  - c. uses enforcement discretion in policing compliance with the law
3. **Judicial:** courts evaluate whether the executive branch (agencies) properly implemented the statute in a specific factual context; “construes” the law.

**C. What is “the law”?**

The statute (enacted by the legislative branch) along with the regulations (promulgated by the executive branch) as construed by the courts (judicial branch).

**D. How the law evolves**

The courts decide cases initiated or defended by the agency (the executive branch).  
If the legislature disagrees with the court’s decision, it may amend the statute.

(STATUTES + REGULATIONS) as interpreted by the COURTS = THE LAW

## E. Other laws that apply

- **U.S. and Connecticut Constitutions:** 4<sup>th</sup> amendment searches, 14<sup>th</sup> amendment procedural and substantive due process
- **Freedom of Information Act:** notice, conduct of public hearings, rights of the public
- **Connecticut Environmental Protection Act:** allows “environmental intervenors” to become parties, upon filing of a verified petition
- **Municipal charter**
- **Municipal ordinance**

## F. Powers and Duties of Agencies and their Agents

1. establish the boundaries of wetlands and watercourses in the municipality
2. grant, deny, limit or modify a permit for a regulated activity in accordance with criteria and procedure established by statute and/or regulation
3. comment to DEEP on wetlands permit applications by state agencies
4. enforce the IWW Act against persons exceeding their permits or without permits
5. agency may delegate to duly authorized agent to approve or extend activity not in inland wetlands or watercourses
6. duly authorized agent may issue orders (cease, desist and restore)
7. *if municipality has adopted ordinance providing for municipal fines, agency may issue citation*

## G. Jurisdiction over “regulated activities”

1. definition: “any operation within or use of a wetland or watercourse involving removal or deposition of material, or any obstruction, construction, alteration or pollution, of such wetlands or watercourses”
2. activity need not be conducted in watercourse itself if the watercourse is altered or polluted by action occurring elsewhere: long established by court cases.
3. agency may promulgate a regulation setting up “upland review areas”:
  - a. areas adjacent to wetlands or watercourses, with a 100’ upland review area the most common size.
  - b. permit conditions on activities in the URA must address protecting wetlands and watercourses, not just preserving the URA.
  - c. the URA is not a no-build or no-activity zone.
4. Activities exempt from the IWW Act set out in statute – agencies can’t enlarge or eliminate exemptions → exempt activities are not subject to permitting requirements.

## H. Conduct of agency

1. at duly noticed meeting, agency may proceed in “meeting” or “public hearing” format.
  - a. meeting: agency receives no input from the public, receives input from applicant, relevant municipal agencies/employees, outside experts;
  - b. public hearing: agency receives input from all of the above + any member of public who may comment and pose questions to applicant.
2. IWW Act restricts the occasions when agency may hold public hearing:
  - a. when agency has determined by voting that the activity may have a significant impact on wetlands or watercourses;
  - b. when the agency finds by voting that a public hearing would be in the public interest
  - c. when agency receives within 14 days of receipt of the application a petition signed by at least 25 persons 18 years or older who reside in the municipality.
3. Agency is not required to hold public hearing where environmental intervenors have become parties; intervenors must be allowed to address the agency (the same as applicants) but that does not extend to members of the public unless the agency has a reason to hold a public hearing (see #2 above).
4. Under prescribed circumstances, the agency’s agent may approve or extend a permit.
  - a. agent completed comprehensive training program
  - b. activity not conducted in wetland/watercourse
  - c. activity have no greater than minimal impact on wetland/watercourse
5. Agency rules on requests for determination of exemption: agency is determining whether it has any jurisdiction over the conduct. If it is not a “regulated activity”, no permit can be required.
6. Agency can revoke or suspend a permit after strictly following the statutory requirements for notice to the permit holder and providing a hearing where the agency has to establish the reason(s) why the permit should be suspended/revoked.
7. Permit renewal: any permit shall be renewed upon request, unless:
  - a. substantial change in circumstances that requires a new permit application;
  - b. enforcement action undertaken for activity which is subject of renewal;
8. Fundamental fairness: agency proceedings are informal, strict rules of evidence do not apply; comply with “fundamental rules of natural justice.”
  - a. notice of meeting

- b. parties have a right to produce relevant evidence, to cross-examine witness and to offer rebuttal testimony
- c. parties have opportunity to know the facts on which the agency is going to rely
- d. decision by an impartial, unbiased agency
- e. no receipt of evidence outside of meeting/hearing process (ex parte receipt of evidence)

## **I. Making the record**

1. the “record” is the only thing a judge will review when an appeal is filed in court
2. record = application + any supporting documentation, any evidence received at the meeting/hearing, the notice of the meeting/hearing, the decision issued, the minutes of the meeting, recording of the meeting/hearing (which is produced as a transcript).
3. Agency members “make the record” by:
  - a. questioning applicant and its witnesses thoroughly, including the qualifications of the experts to offer expert opinions
  - b. disclosing if a member has expertise of which the rest of the agency will rely (engineer, geologist, soil scientist, etc.)
  - c. deliberating out loud, discussing what facts applied to which factors which were crucial to the outcome of the application.

## **J. Factors for consideration**

1. set out in statute, § 22a-41(a) and in municipal regulation
2. Agency need not express opinion as to each criterion on every application
3. Agency must address some and with particularity

## **K. Substantial evidence**

1. Agency decision must be based upon substantial evidence.
2. Evidence of general environmental impacts, mere speculation, or general concerns do not qualify as substantial evidence: “potential harm,” “may/might harm,” “increase the risk of potential harm,” “worried that . . .”, “concerned that . . .”
3. “The sine qua non of review of inland wetlands applications is a determination whether the proposed activity will cause an *adverse impact* to a wetland or watercourse.” (Emphasis in original.)

## WHAT'S SUBSTANTIAL EVIDENCE FOR INLAND WETLANDS & WATERCOURSE COMMISSIONS?

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### MUST HAVE A LINK BETWEEN THE ACTIVITY AND HARM TO THE WETLANDS/WATERCOURSE ON THE SITE; MORE THAN MERE SPECULATION

- In an inland wetlands decision there must be substantial evidence that an adverse impact on wetlands or watercourses will result from the proposed regulated activities and the agency's decision must be supported by "more than a possibility of adverse impact." *River Bend Associates v. Conservation and Inland Wetland Comm'n*, 269 Conn. 57, 69 (2004).
- "[A]n impact on the wetlands that is speculative or not adverse is insufficient grounds for denial of a wetlands application." *River Bend* at 79 n.28.
- "[The Supreme Court's] prior case law [does] not authorize the denial of a wetlands application due to uncertainty as to the impact of a proposed activity on wetlands and watercourses." *River Bend* at 79 n.28.
- "The substantial evidence test is not met by a general statement by an expert that 'some type' of adverse impact is likely to result from the proposed regulated activities." *Three Levels Corp. v. Conservation Comm'n*, 148 Conn. App. 91 (2014).

### GENERAL ENVIRONMENTAL IMPACT IS NOT SUBSTANTIAL EVIDENCE OF ADVERSE IMPACT TO THE WETLANDS/WATERCOURSES

- "Evidence of general environmental impacts, mere speculation, or general concerns do not qualify as substantial evidence." *River Bend* at 71.
- "[A] finding of potential generalized impacts is insufficient to support a denial of an application for a permit to conduct a regulated activity. The commission must make a determination that the activity will have a likely adverse impact on the wetlands and watercourses and that finding must be supported by substantial evidence in the record." *Cornacchia v. Environmental Protection Commission*, 109 Conn. App. 346, 356, 951 A.2d 704 (2008).

### THE CREDIBILITY OF WITNESS IS WITHIN THE SOLE PROVINCE OF THE COMMISSION, BUT---

- "While ... an administrative agency is not required to believe any of the witnesses, including expert witnesses ... it must not disregard the only expert evidence available on the issue when the commission members lack their own expertise or knowledge." *Tanner v. Conservation Comm'n*, 15 Conn. App. 336, 341 (1988).
- [I]n the absence of countervailing expert testimony, where the commissioners themselves do not possess relevant technical expertise, a commission may not draw inferences which undermine an expert's site specific opinion. *United Jewish Center v. Brookfield*, 78 Conn. App. 49, 60 (2003).

- “[A]ny commission acts without substantial evidence, and arbitrarily, when it relies on its own knowledge and experience concerning technically complex issues . . . in disregard of contrary expert testimony. . . .” *Feinson v. Conservation Comm’n*, 180 Conn. 421, 429 (1980).

#### NO SUBSTANTIAL EVIDENCE WHERE:

- Testimony that a detention basin *could* fail but NO EVIDENCE of what would happen if it failed. *Estate of Machowski v. Inland Wetlands Comm’n*, 137 Conn. App. 830, 840 (2012) (“[e]vidence regarding *potential* impacts to wetlands *in the event* of a failure of the detention basin does not in itself amount to substantial evidence.” (emphasis in original)).
- Evidence that some sediment and siltation would enter the wetlands or watercourse, but NO EVIDENCE that the amount would harm the wetlands or watercourse. *AvalonBay v. Inland Wetlands and Watercourse Comm’n*, 130 Conn. App. 69, 78 (2011) (“the [commission] could not simply assume that the entry of sediment and siltation would adversely affect the wetlands and watercourse without evidence that it would in fact do so.”).
- Evidence that during construction trucks would cross bridge over wetlands + statement by vice chair that “it doesn’t take a rocket scientist to figure out that sometimes cars drop oil, and salts get into the wetlands and all kind of things happen” because vice chair did not hold herself out as a qualified pollution expert and her concerns were merely speculative. *Lord Family of Windsor LLC v. Inland Wetlands and Watercourses Comm’n*, 103 Conn. App. 354, 363-64 (2007).
- Evidence of a project’s density but NO EVIDENCE that the density will cause an adverse impact. *Toll Bros. v. Inland Wetland’s Comm’n*, 101 Conn. App. 597 (2007) (“any connection between the project’s density and a likely impact on the wetlands is merely speculative”).
- Evidence that elements (nitrogen, copper & zinc) would disperse into the wetlands, but NO EVIDENCE that any specific harm would therefore occur. *River Bend Associates v. Conservation and Inland Wetlands Comm’n*, 269 Conn. 57, 81 (2004).